ENGINEERING NEWS-RECORD

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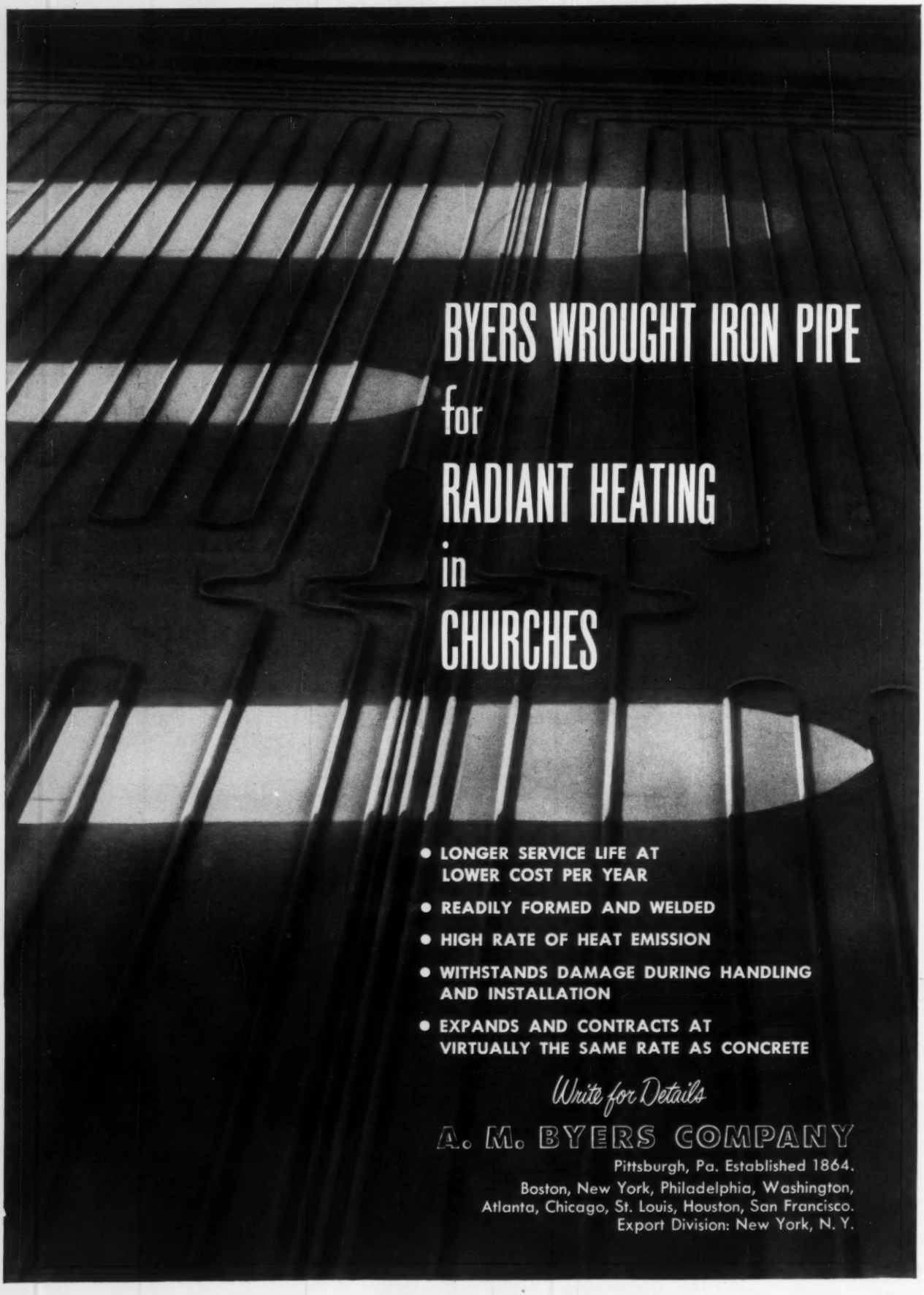
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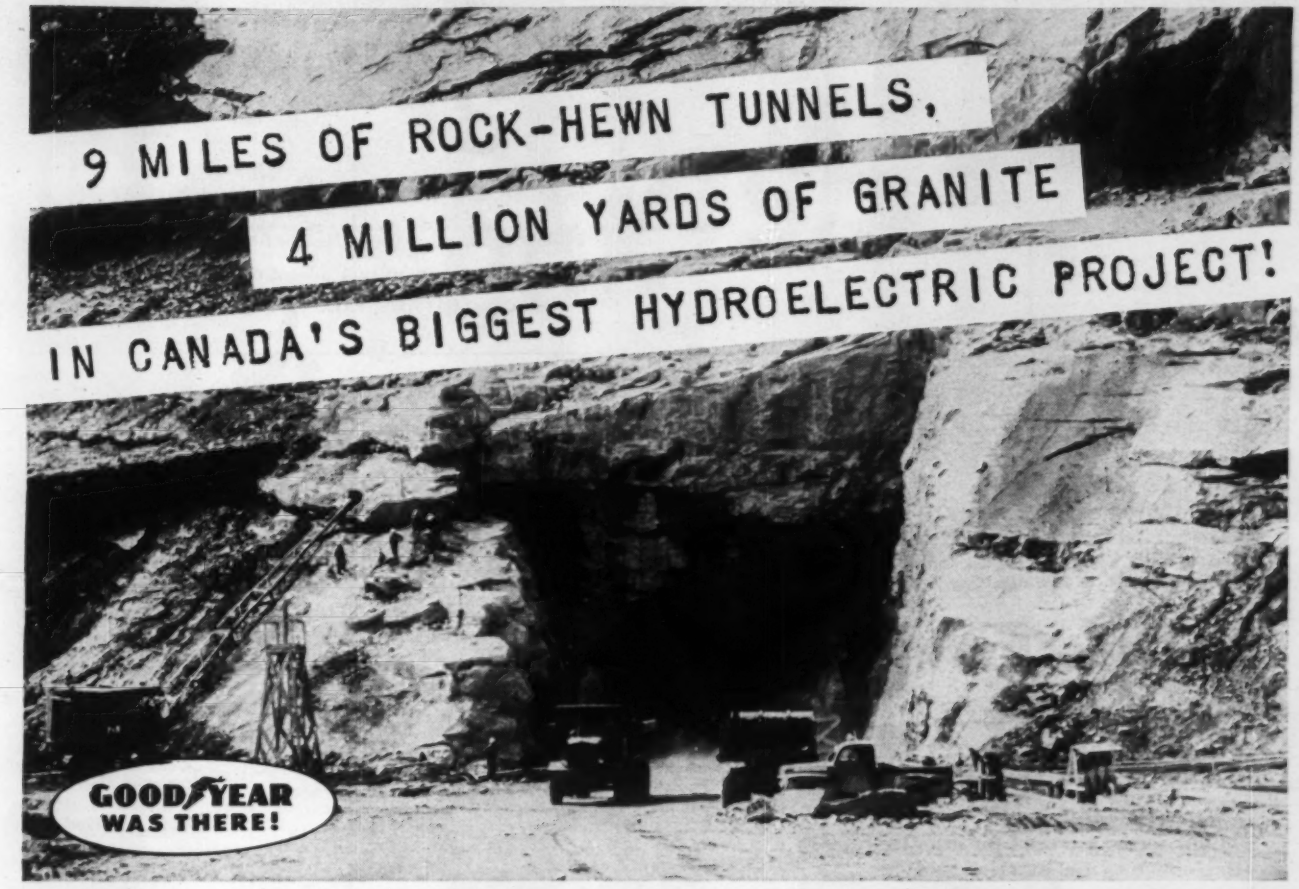

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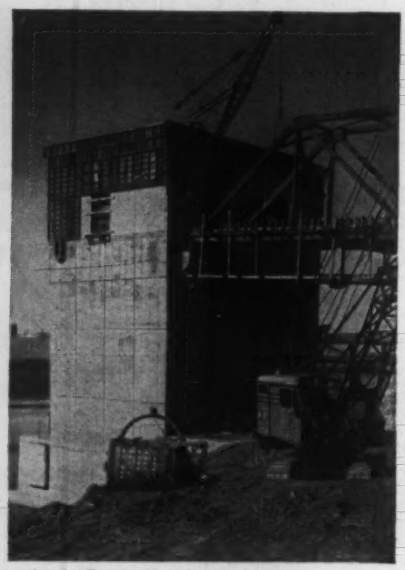

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Publisher

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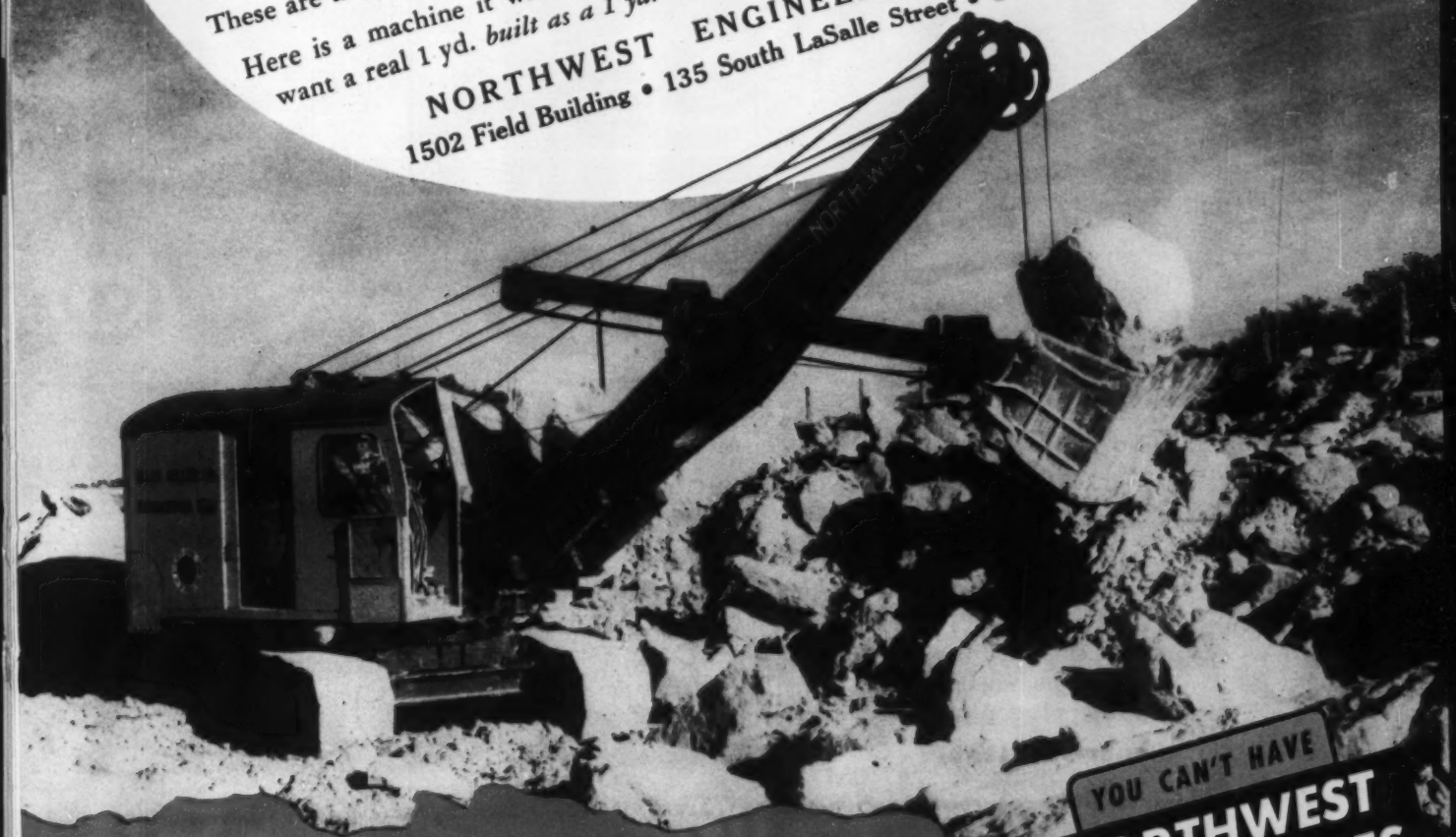

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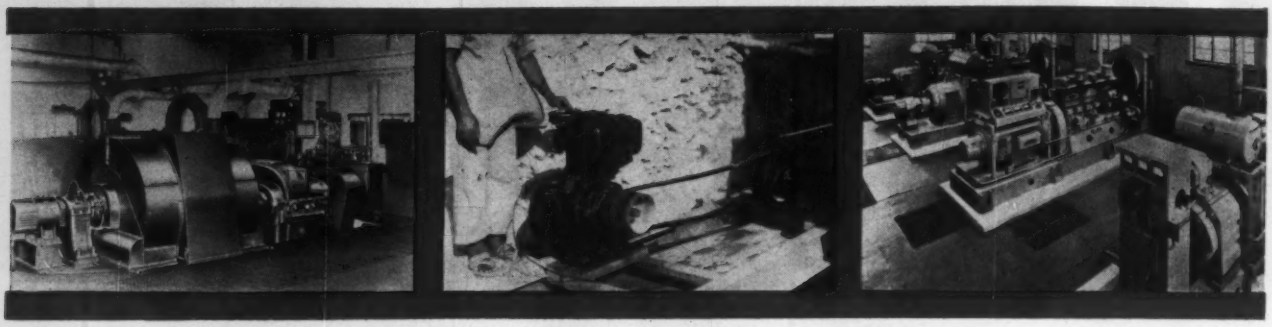
ZULULAND
Brush 2500 KW back pressure steam turbo-generator set installed in sugar mill.

Petter

PERSIAN GULF
Petter 5 HP aircooled diesel driving well pump. (A Shell photograph)

McLAREN

THAILAND
McLaren/Brush 55 & 85 KW diesel generator sets for rural electrification scheme.



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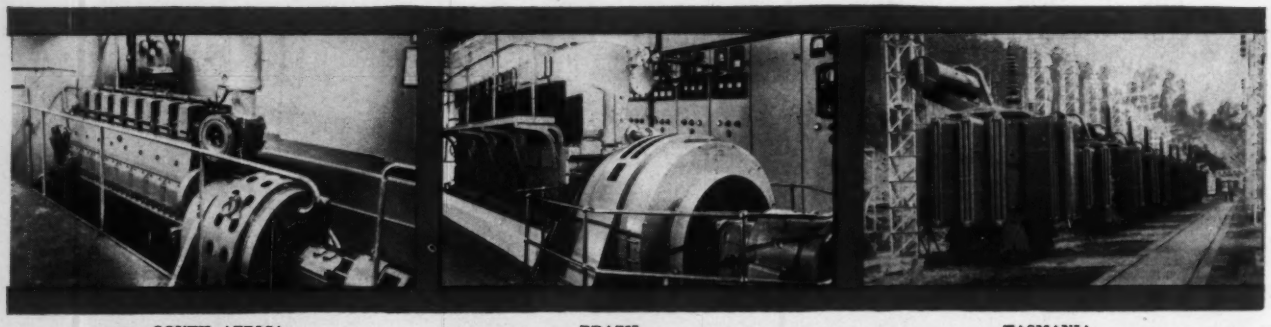

National

SOUTH AFRICA
National R4AV8 400 KW diesel generator set installed in a newsprint plant in Capetown.

Mirrlees

BRAZIL
Mirrlees/Brush KS8 1040 KW 400 RPM diesel generator sets with Brush switchgear installed at Santa Lina.

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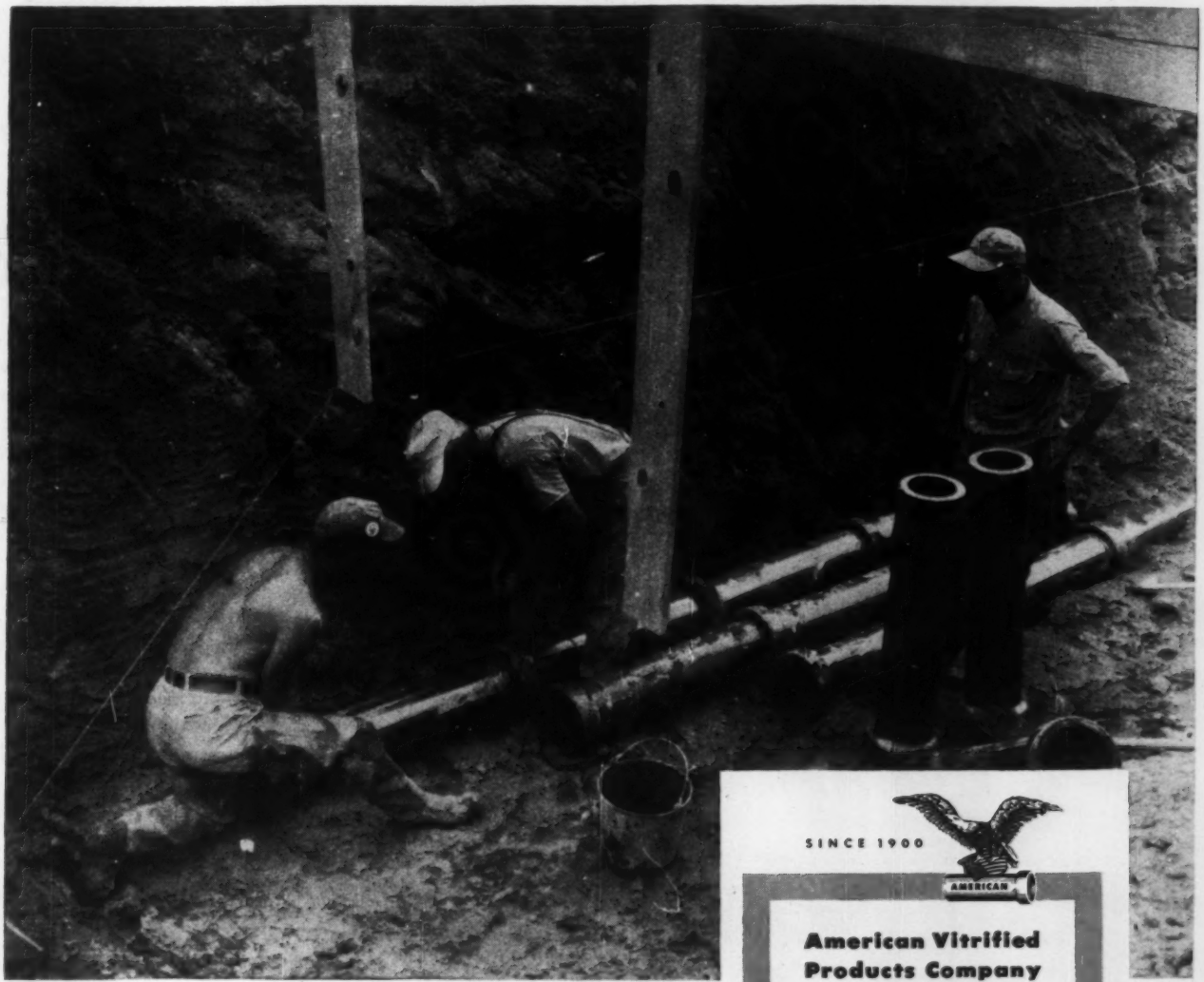

Photograph by Doug Campbell

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2.

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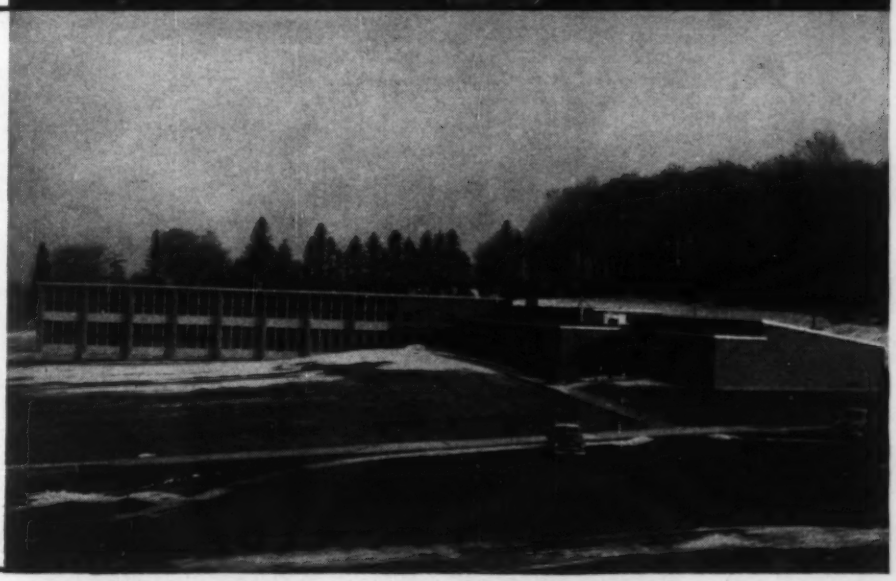
3.

This modern, attractive school building at Spencerport, N.Y. called for safety planning and good supervision at every stage of construction.



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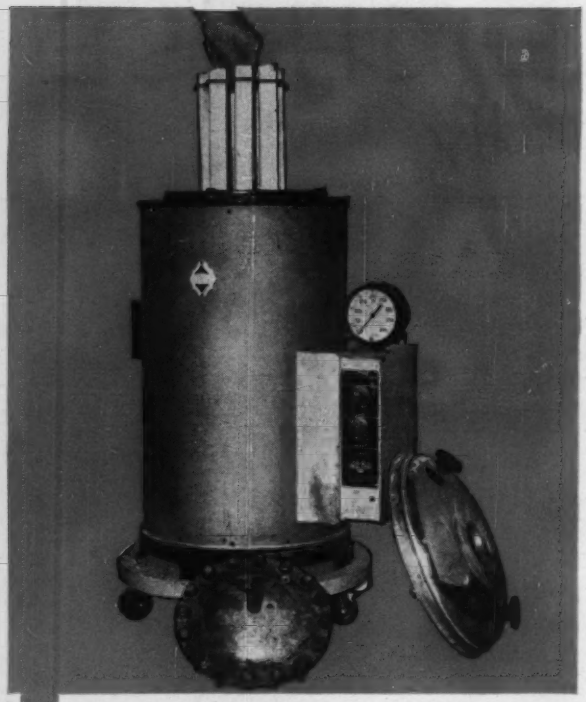
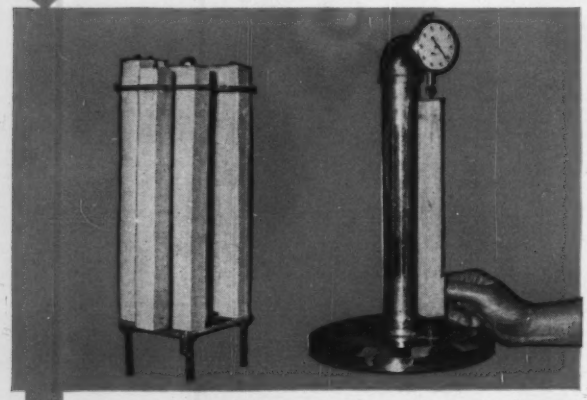
BRIXMENT MEETS AUTOCLAVE TEST!

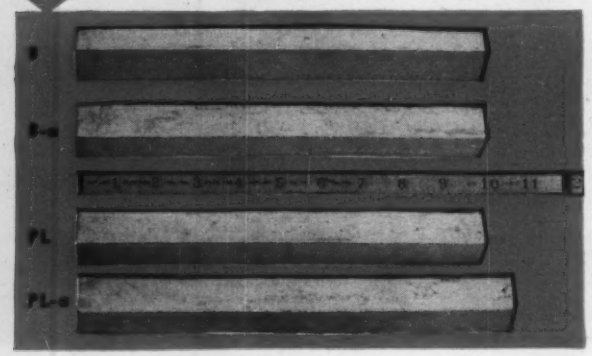


The autoclave test requires the use of a high pressure steam chest (above). Masonry cement bars approximately 1″ x 1″ x 10″ are exposed to 295 lbs. steam pressure, 420° F., for 3 hours. Measurements of the bars are made before and after test as shown below.



Below: Bars of Brixment, and of portland cement and a lime which does not meet the autoclave test. The expansion of the portland cement and lime bar, after autoclaving, is quite evident.

B—Brixment, not autoclaved.
B-a—Brixment, autoclaved.
PL—Cement and lime (1 to 1) not autoclaved.
PL-a—Cement and lime (1 to 1) autoclaved.



Sound mortar is essential for strong, durable brickwork. To be sound, mortar must be free of constituents which may cause abnormal expansion after long exposure to weather.

Unsoundness in mortar material is readily detected by the autoclave test. This severe test rapidly accelerates the chemical reaction of mortar materials, and the slightest unsoundness is immediately revealed by excessive expansion.

Brixment easily meets the autoclave test requirements of the Federal and ASTM specifications. It also complies with the strength requirements of both specifications, for Type II masonry cement. Therefore, when Brixment is used, sound mortar and strong, durable brickwork are assured.

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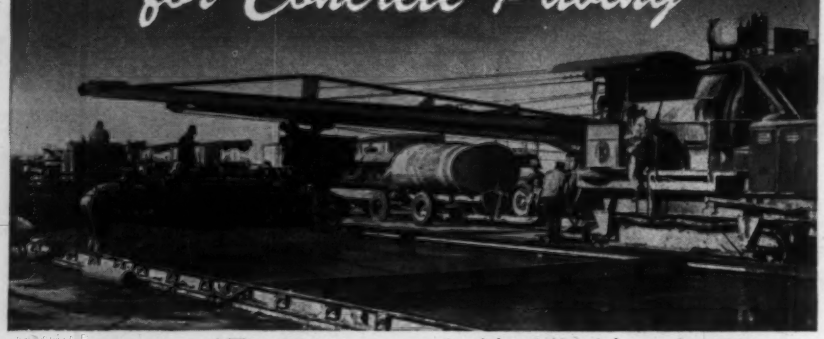

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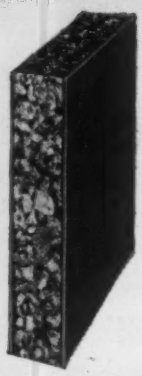

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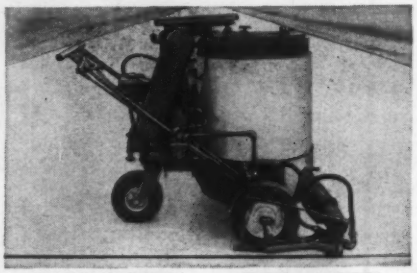
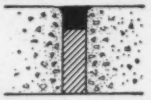
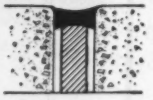
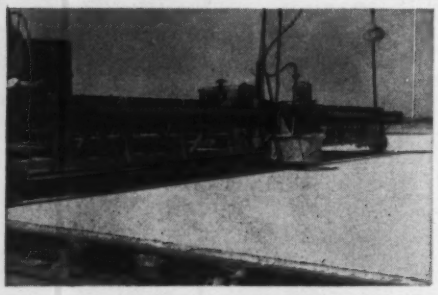




Joints compressed in warm weather temperatures



Joints opened in sub-zero temperatures



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READER COMMENT

Forgotten Consideration?

SIR: The article "Failure of a Concrete Rigid Frame Blamed on Reinforcing Details" (ENR Nov. 11, 1954, p. 36) and its subsequent discussions leaves something to be desired from the profession. As to the failure, it is suggested that concrete compressive stresses under the hooked ends of the horizontal tension bars played a very important part as the initial stress conditions leading to complete collapse. What is more important, engineers should realize that these stresses are calculable and must be considered in the design of all rigid frame corners. To all appearances, consideration of these stresses has been neglected in the redesign of frames as well as original design.

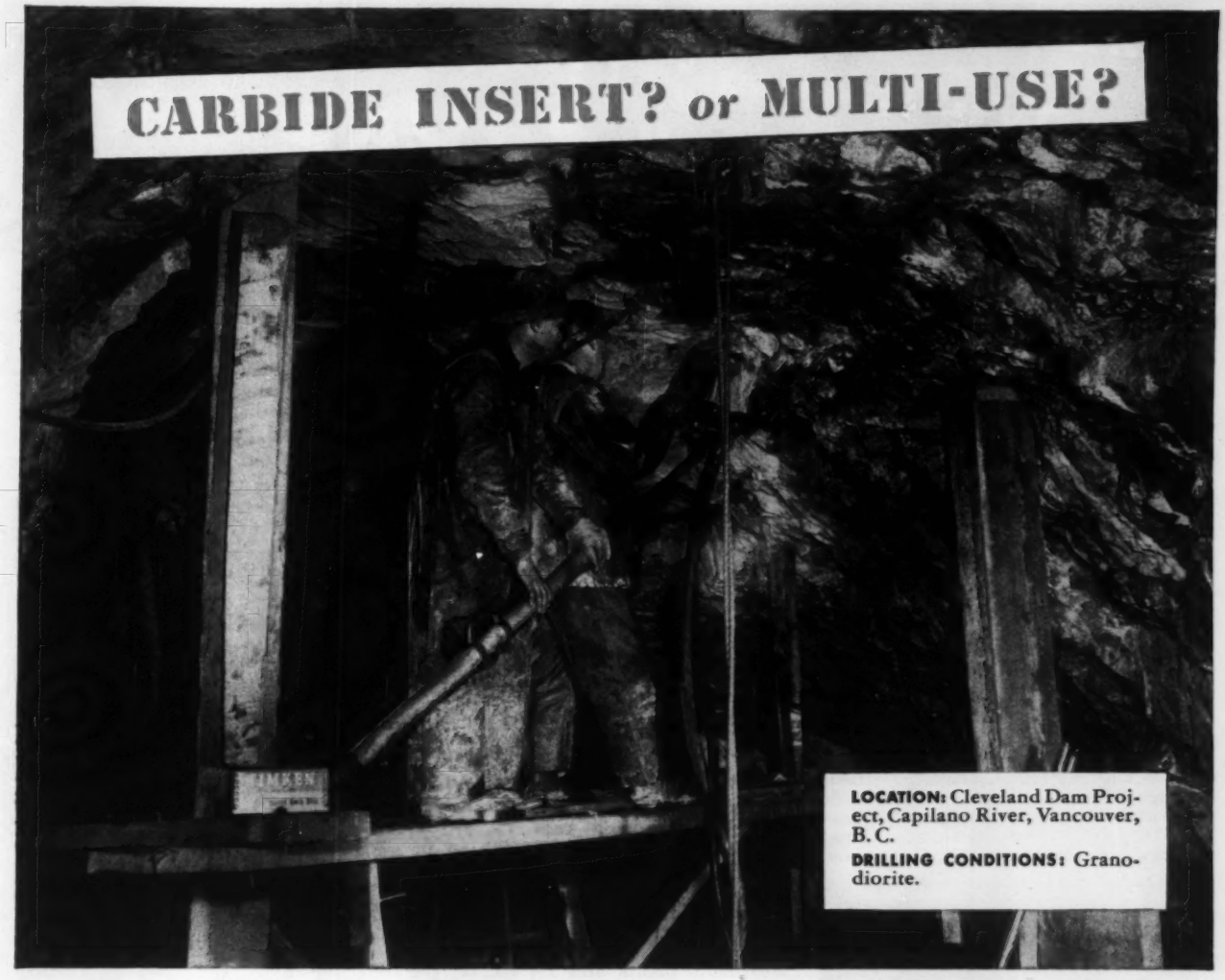
Separating a reinforcing bar from the knee and showing all forces acting upon it, the resulting diagram shows a uniform radial pressure beginning and ending at the intersections of the portion of the arc and the straight lines. For purposes of analysis, a single uninterrupted bar is used and uniformity is assumed. The radial pressure acting on the bar is supplied by the concrete acting in compression. The resultant of this pressure on the concrete is at 45° and is equal and oposite to the resultant of the compressive forces acting at the intersection of the compression flanges of the beam and column members achieving internal stability.

Assuming a constant stress in the bar and the application of the ring tension formula. It can be shown that a definite radius of bar bend is required to keep the compressive stress of the concrete under the bar within the allowable prescribed by cole. Using a steel stress of 20,000 psi and a concrete compressive strength of 3,000 psi, r = 14.0d. Based on this analysis, the radius of bend for #11 bars under 20,000 psi stress should equal 19.7".

It becomes apparent in designing under this limitation that it is not merely necessary to detail according to the statement that "the bars should follow the curved trajectory of the principal tensile stress", but, in addition, bar sizes must be carefully selected to limit the coincident concrete compressive stresses for the particular radius required by dimensions. This limitation becomes important when comparatively shallow sections are being considered.

It is interesting to note a code re-

(*Continued on page 12*)


CARBIDE INSERT? or MULTI-USE?
LOCATION: Cleveland Dam Project, Capilano River, Vancouver, B. C.
DRILLING CONDITIONS: Granodiorite.

TIMKEN® carbide insert bits chosen in competitive tests for Cleveland Dam

TO insure the best bit performance on the Cleveland Dam Project, Capilano River, Vancouver, B.C., the contractor chose his bits through competitive tests. Several other makes of rock bits were tested, but Timken® carbide insert bits won out. They were used from the start of the job to the finish.

Timken carbide insert bits are most economical for constant-gauge holes, small-diameter blast holes and very deep holes. And they're your best bet for highest speed through hard and abrasive ground such as the very hard Granodiorite encountered on the Cleveland Dam job.

For drilling in ordinary ground, Timken multi-use bits are more economical. With correct and controlled reconditioning, you get the lowest cost per foot of hole when full increments of steel can be drilled.

You can use either Timken multi-use or carbide insert bits on the same drill steel providing they are in the same thread series. As many as 93 different Timken bits fit *one* drill steel! You can change bits easily and quickly right on the job as the ground changes. Both types of Timken rock bits are made from electric furnace Timken fine alloy steel. A special shoulder union, developed by the Timken Company, protects threads from drilling impact.

To be sure of getting the best bit for your job, call on the Timken Rock Bit Engineering Service. You may feel free to call on their twenty years experience at no obligation. Write The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

Timken threaded multi-use rock bit

Timken threaded carbide insert rock bit

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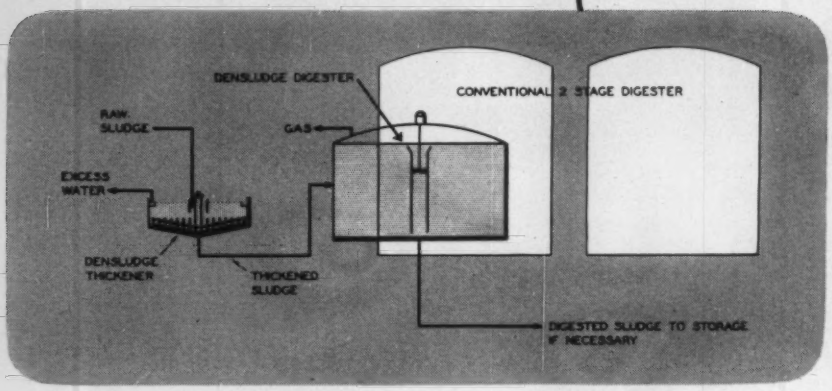
Why Digest Water?

Densludge System Cuts Digester Requirements up to 80%



There's no mystery to the Dorrco Densludge Digestion System. Major components are a Densludge Thickener followed by a Dorr Digester equipped with a high-capacity, draft tube mixer.

How are such amazing reductions in digester capacity requirements possible?

First — Primary digester volume is halved because raw sludge volume is reduced by one half by removal of excess water in Densludge Thickener . . . same digestion detention is provided with half the digester volume.

Second — Secondary digester is not required . . . supernatant is eliminated . . . only storage volume required is for digested sludge.

Third — High capacity mixing means a smaller digester due to increased volume utilization efficiency.

And Densludge Digestion can be used with any flowsheet in both new and existing plants. Design loadings may be as low as ½ cu. ft. per cap. for primary treatment plants and 1½ cu. ft. per cap. for activated sludge plants. For the complete story on Dorrco Densludge Digestion, backed up by operating results from full scale installations, write for Bulletin No. 6262, Dorr-Oliver Inc., Stamford, Conn.

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READER COMMENT

quirement which apparently has considered this same line of reasoning. This is in Section 904(e)5 of the ACI Code which states that hooks in web reinforcement with stresses exceeding 10,000 psi shall have the 2 bar diameter radius of bend increased 1½ bar diameters for every 1,000 psi increase over 10,000 psi. This paragraph also applies to any hook with a radius of bend of more than 6 bar diameters (Section 906a) although it is to be noted that any hook with a radius of bend larger than 6 bar diameters is by definition no longer a hook but merely an extension to the bar. Under this requirement a #11 bar with a 20,000 psi stress should have a radius of bend equal to 24.0″. According to the previous analysis this radius is conservative for 3,000 psi concrete but produces compressive stresses above the allowable for 2,000 psi concrete.

In general, it is felt that consideration of concrete compressive stresses under tension bars at rigid frame corners according to analysis or *existing* code requirements will produce a satisfactory condition with or without a splice. Continuous bars at the corners are preferable but a properly "executed" splice will be more than sufficient (see March 24 discussion) to meet the design requirements.

DONALD V. KENDALL
Donald V. Kendall
Civil Engineer
Pasadena, Calif.

CALENDAR

Heating, Piping and Air Conditioning Contractors National Association, annual convention, Shamrock Hotel, Houston, Tex., May 10-13.
Engineering Institute of Canada, annual meeting, Royal York Hotel, Toronto, Ont., May 11-13.
Michigan State College Centennial, engineering symposium on the application of automation to building design and construction, East Lansing, Mich., May 12-13.
New York State Society of Professional Engineers, annual convention and engineering industries exposition, Commodore Hotel, New York City, May 12-14.
National Materials Handling Exposition, International Amphitheatre, Chicago, May 16-20.
Structural Engineering Conference, University of Missouri, Columbia, Mo., May 20-21.
Air Pollution Control Association, annual meeting, Detroit, Mich., May 22-26.
National Rivers and Harbors Congress, national convention, Mayflower Hotel, Washington, D. C., May 30-June 1.
National Society of Professional Engineers, annual meeting, Bellevue-Stratford Hotel, Philadelphia, June 2-4.
Amercian Water Works Association, convention, Conrad Hilton Hotel, Chicago, June 12-17.
American Society of Civil Engineers, Spring convention, Hotel Jefferson, St. Louis, June 14-17.

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ON EVERY JOB

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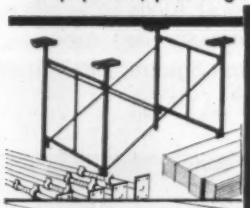

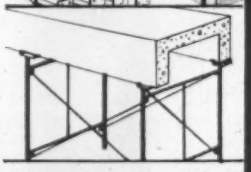

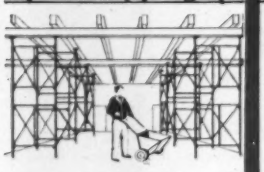

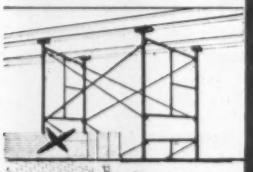

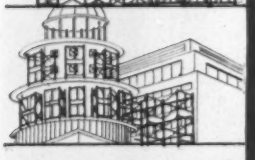

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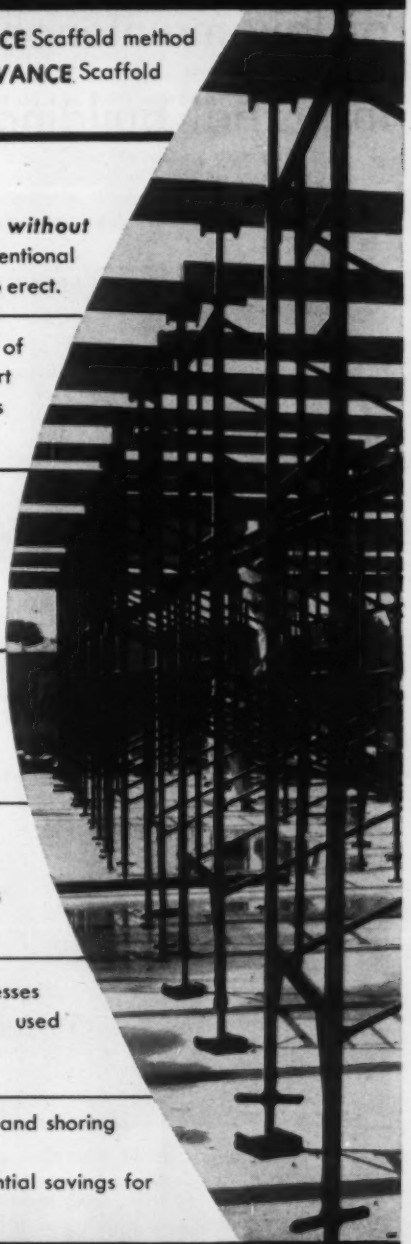

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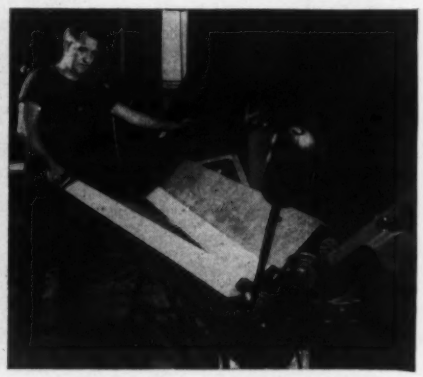
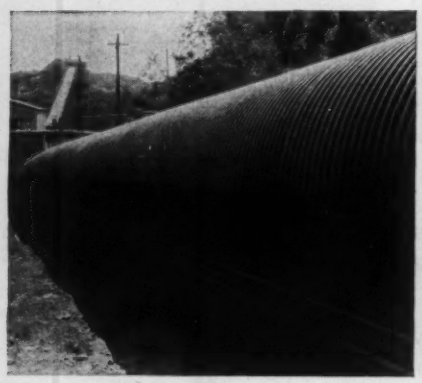
Alcoa Aluminum Industrial Corrugated Sheet—ideal for maintenance-free, insulating roofing, single sheath siding or site-fabricated insulated curtain walls.



Alcoa Aluminum Flat Flashing Sheet—available in plain or embossed finish, quickly and easily field-formed on a standard hand brake.



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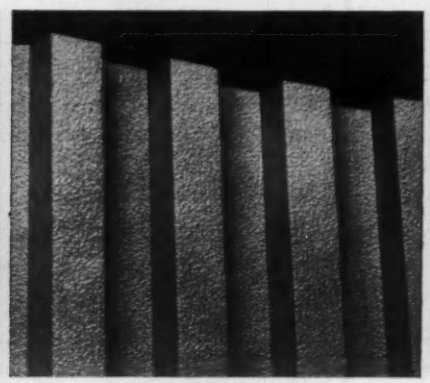

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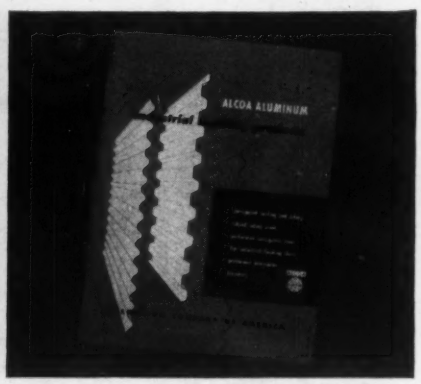

Alcoa Aluminum Industrial Building Products are completely described in Alcoa's A.I.A. File No. 12-C. Write today for your copy!

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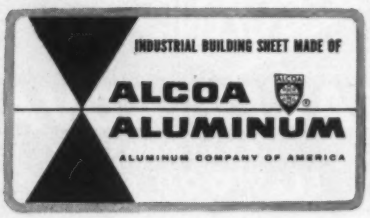

PERMITE ALUMINUM PAINT

lengthens bridge life for New York Central System

When S. S. Papas, president of the Republic Structural Painting Corp., Cincinnati, Ohio, was awarded the contract to repaint the New York Central's L & J Bridge, he chose Permite Aluminum Paint to meet Railroad Specifications for the job. Experience through the past 25 years (during one year of which time he painted 106 bridges for the New York Central, alone) has proved to Mr. Papas that Permite Paint gives *more* years of protection for buildings, bridges, and equipment.

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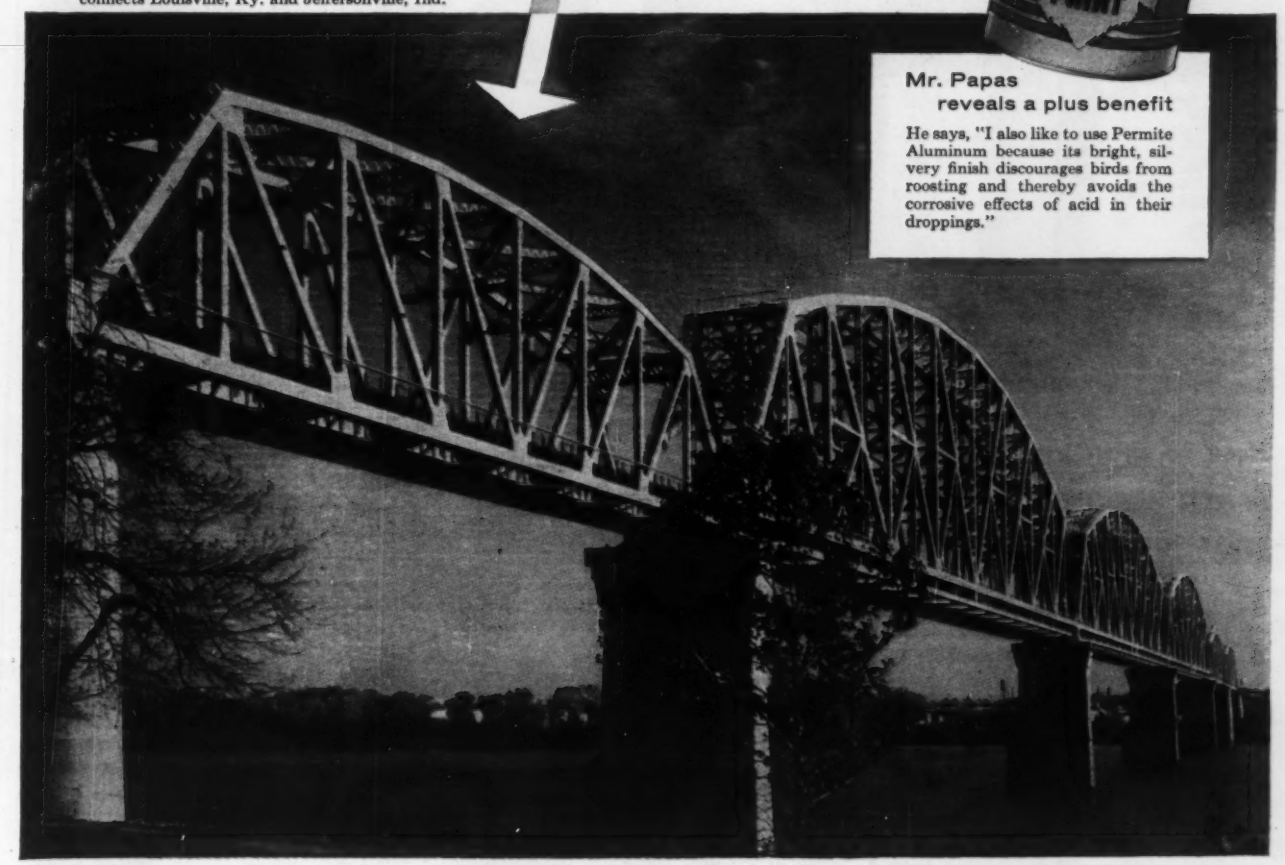
Orders filled quickly from distributor stocks located throughout the United States. Catalog and prices sent promptly on request.

The L & J Bridge: 4,300 gal. of Permite Aluminum Paint were used to beautify and protect the 18,080 tons of steel in this great railway bridge, owned by the N. Y. Central System. Over two miles in length, it connects Louisville, Ky. and Jeffersonville, Ind.



Mr. Papas reveals a plus benefit

He says, "I also like to use Permite Aluminum because its bright, silvery finish discourages birds from roosting and thereby avoids the corrosive effects of acid in their droppings."

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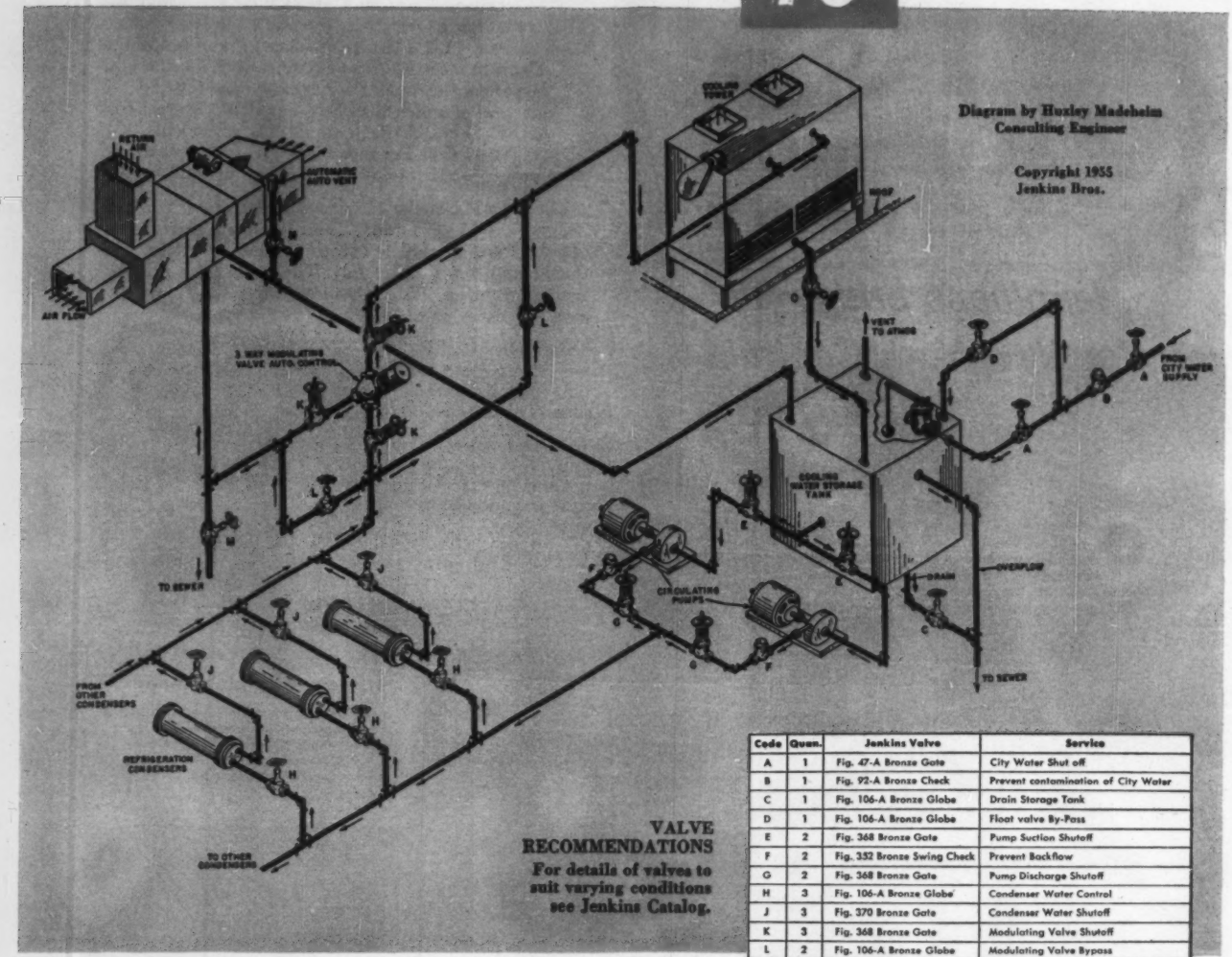
JENKINS PRACTICAL PIPING LAYOUTS

75



VALVE RECOMMENDATIONS
For details of valves to suit varying conditions see Jenkins Catalog.

Code	Quan.	Jenkins Valve	Service
A	1	Fig. 47-A Bronze Gate	City Water Shut off
B	1	Fig. 92-A Bronze Check	Prevent contamination of City Water
C	1	Fig. 106-A Bronze Globe	Drain Storage Tank
D	1	Fig. 106-A Bronze Globe	Float valve By-Pass
E	2	Fig. 368 Bronze Gate	Pump Suction Shutoff
F	2	Fig. 352 Bronze Swing Check	Prevent Backflow
G	2	Fig. 368 Bronze Gate	Pump Discharge Shutoff
H	3	Fig. 106-A Bronze Globe	Condenser Water Control
J	3	Fig. 370 Bronze Gate	Condenser Water Shutoff
K	3	Fig. 368 Bronze Gate	Modulating Valve Shutoff
L	2	Fig. 106-A Bronze Globe	Modulating Valve Bypass
M	1	Fig. 106-A Bronze Globe	Drain Heating Coil
N	1	Fig. 106-A Bronze Globe	Vent Control
O	1	Fig. 106-A Bronze Globe	Cooling Tower Water Discharge Shutoff

How to plan piping connections for

SPACE HEATING WITH HOT WATER DISCHARGE FROM REFRIGERATION CONDENSERS

Where continuous refrigeration is required, the heat absorbed by the water circulating through the condensers during the refrigeration cycle may be transferred to circulating air and used for space heating. This hookup illustrates a system that is widely approved for utilizing waste heat in frozen food plants, ice cream plants, supermarkets, and refrigerated warehouses.

A cooling tower for water conservation is included in the usual water cooling system for refrigeration condensers, as indicated. All or a portion of the water which usually flows through the cooling tower system may be diverted and circulated instead through a water coil in the summer air conditioning unit. A three way modulating valve, actuated by a room thermostat, controls the water passing through the two parallel circuits, dividing it according to the heating requirements.

Excess heat, when all the heat is not required, is removed by regulating the amount of the water circulated through the parallel path of the cooling tower. Additional heat may be provided, when needed, from any other customary source.

The cooling tower circuit provides for water storage in a tank inside the building to avoid freeze-ups. The water circuits shown can be full weight red brass pipe, copper tubing, or black iron pipe.

This combination of refrigeration and heating is an adaption of the heat pump cycle and will provide both refrigeration and heat for minimum operating costs.

Consultation with accredited piping engineers and contractors is recommended when planning any major piping installation.

To save time, to simplify planning, to get all the advantages of Jenkins specialized valve engineering experience, select all the valves you need from the complete Jenkins line. It's your best assurance of *lowest cost in the long run.* Jenkins Bros., 100 Park Ave., New York 17.

COMPLETE DESCRIPTION AND ENLARGED DIAGRAM OF THIS LAYOUT FREE ON REQUEST. Includes additional detailed information. Ask for Piping Layout No. 75.

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

TOWARD BETTER CONCRETE—New York City's Concrete Industry Board—which has demonstrated that voluntary action on the part of contractors, labor, and public construction agencies can do much to assure reliability of concrete work (ENR Jan. 13, p. 50)—now has a counterpart in Detroit. Formation of Detroit's Concrete Improvement Board, patterned along the lines of New York's CIB, was proudly announced to the membership of the pioneer group last week by its managing director, Adm. John J. Manning.

THE DIRECT APPROACH—Havana, Cuba, has bypassed any such voluntary action group as a Concrete Industry Board. When poor material reached the Palace of Justice, now under construction, the country's chief legal talent was overseeing construction and knew just what to do. Rules were written in the form of a decree which President Batista readily agreed to sign. But he never had to make it official. The concrete supplier knuckled under and agreed to these conditions:

The supplier to be paid for delivered concrete testing to less than the specified 28-day strength at a price reduced by twice the usual differential between the strength that was ordered and that which was poured. Then, if any redesign, reinforcement, or reconstruction is caused by the placement of material below specified strength, the concrete supplier must pay all costs.

EQUIPMENT TAX BLOCKED—The Vermont legislature has recalled a bill it had passed to tax the equipment of out-of-state contractors used on state highway projects. The measure was withdrawn under threat of a veto that would have termed the law a violation of the federal Constitution on grounds that it established an arbitrary classification for tax purposes.

TOO LATE—Mahoning County (Youngstown, Ohio) voters have learned too late that a $900,000 bond issue they voted for a new county jail might not have been necessary. Scheibel & Shaffer, the Youngstown architectural firm selected to design the structure, has reported that the old building is structurally sound and only needs a remodeling. But, an opinion from the county prosecutor's office says that the bond issue must be devoted to the purpose specified—a new building on the site of the present jail.

HELIPORT PLANNING—Discussing the vast potential for helicopter travel, Civil Aeronautics Administrator F. B. Lee last week cautioned municipal planners at least to obtain an option of ample space for a heliport. The CAA head noted that 133,000,000 passengers, who annually make intercity flights of 150 to 700 mi, comprise a potential travel market for helicopter and other rotor-craft service.

54-45-D

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Barber-Greene 711 Ditcher
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★ 45 m.p.h. travel speed.

★ Ready to dig on arrival.

★ Hydra-Crowd gives infinite range of crowding speeds.

★ Depths: to 5′.

★ New overload release eliminates shock loads.

★ Operated from cab or ground.

★ Shrinks ditching costs.

★ Shrinks the distance between jobs.

Let us show you how the new B-G 711 Ditcher can reduce your costs.

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AURORA, ILLINOIS, U.S.A.

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descriptive literature... sound movies

cost studies... nearby job inspection... plant layouts

WASHINGTON OBSERVER

Further stimulation of public works may result from new policies on economic justification for proposed multi-purpose dams and irrigation projects now under consideration by the Administration. They would give a basis for faster approval by Congress, and, the Administration hopes, for a faster rate of appropriations.

Changes recommended in Budget Circular A-47 would:

Lengthen repayment period for irrigation, when justified.

Extend economic life of irrigation projects to a maximum of 100 years.

Give more weight to secondary benefits in figuring cost analysis—i.e. such benefits as increased non-farm profits in the area, increased population and investment opportunities, and so on. (Essentially only primary benefits—actual power and irrigation—are now considered.)

Repayment for power and municipal water supply benefits would continue to be figured on a 50-year basis.

•

A new citizens committee on the Clay report is trying to breathe new life into the Administration's highway program. Organized last week, it has business and professional, public and private representation, with Arthur O. Dietz, president of the C.I.T. Financial Corp., as head. Top staff man is Carlisle Bargeron, a long-time public relations man for the group that opposed the St. Lawrence Seaway.

The group's official name: Highways for Survival Committee. It's big job will be to try to sell Congress some parts of the Clay program, particularly the Federal Highway Corp. financing scheme. The Senate roads subcommittee already has turned down that proposal (see page 25). The Administration is hoping it can get approval from the House committee, but is admitting pessimism.

But chances of some new highway program are improving, with indications of some shifts on both sides to a middle-ground.

•

Senate public works subcommittee will take up air and water polution bill once the highway situation is cleared up. Outlook is that basic changes being asked by Secretary Hobby and the Public Health Service won't be included in the bill to be voted by the subcommittee. Most controversial of the revisions sought: that federal government get more power to take offender into court without consent of the state authorities (ENR March 17, p. 21).

Most witnesses opposed more federal power. Instead, they generally agreed with an extention of the pollution law along these lines favored by Sen. Kerr, subcommittee chairman:

Water pollution—extension of existing law which expires this year plus bigger emphasis on federal research.

Air pollution—about the same approach as for water pollution.

The committee considers pollution as still a local program and odds are that the legislation won't beef up federal authority, or federal responsibility.

•

Defense Department is talking tougher about dispersal. Air Secretary Talbott stirred up congressmen from affected districts when he testified against any further expansion of defense plants on either coast.

Production won't be cut back in existing plants close to the oceans but new construction will be built inland. Some missile makers are already hit.

U. S. GIANT® CONTRACTORS' HOSE GETS THE JOB DONE QUICKLY

Here are the facts about U. S. Giant's superior construction:

U. S. Giant has a *smooth* bore with a rubber tube of special quality, protecting the wire from rust, acid, or other deteriorating elements. Whether it's suction or discharge, it's all the same to U. S. Giant —the job gets done quickly and efficiently.

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You can depend on U. S. Giant Hose to do its part on *any* water suction or discharge job in any weather, under the worst working conditions.

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An ENR Exclusive

In the foothills of the Rockies, work will start next month on a "job of the century." It's . . .

The Air Force Academy: A First Report

J. R. Carr
Associate Editor

Early in June earthmoving equipment will spearhead the construction mission on a 17,400-acre tract just north of Colorado Springs, Colo. The objective: to prepare for construction of the $125-million U. S. Air Force Academy.

In these days when multi-million-dollar military installations have become commonplace, another $125-million project normally would rate but routine notice. But, the Air Force Academy—which will take its place with the venerated academies at West Point and Annapolis—inevitably rates as a prime prestige project for the construction industry.

The manner in which the job is being organized makes it apparent that the accent will be on perfection. And, it is notable that contracting procedures are being set up to encourage wide participation in bidding.

• **Project preview**—Details of the architectural treatment and functional design of buildings are yet to be disclosed. But, on the basis of exclusive interviews with key men of the military's construction agency and the architect-engineers, ENR has obtained an authoritative preview of the project, how it will be organized and administered.

Basically, the scope of the project—for which final designs, plans, and specifications are in preparation, can be measured in terms of these requirements:

• Academic, living and recreation facilities for a student body of 2,640 cadets.

• Housing and community facilities for staff personnel and dependents, bringing the total population of the area to 8,500.

• An airfield with a runway of 8,800 x 200 ft and facilities for 30 training aircraft.

Bids will be received on the first contract about May 25; on the second about June 1. Initial contract will cover airfield grading, a stream diversion and some highway and relocation work. Second contract will be for grading, drainage and subbase construction for about one-third of the planned road network in the site.

Contracts for construction and installation of basic utilities are expected to be let later this year.

• **Basic facilities**—The cadet area will require dormitories to house 2,640 cadets—probably two men to a room. This area will have its own service facilities such as a tailor and barber shop; its own chapel; and various administrative buildings. Athletic facilities will include a stadium, gymnasium and perhaps a field house.

A variety of special purpose buildings will be required for the academic program, including laboratories, classrooms, drafting rooms, reading and conference rooms. There also will be a library and perhaps a museum.

Outside the cadet area, preliminary planning calls for about 1,200 family housing units for supervisory personnel, faculty, airmen and civilian employes. In addition, there will be bachelor officers quarters, nurses quarters, and dormitories for WAF and airmen. This area will have its own service and recreation facilities.

A community center will include post office, commissary, theater, various shops, library and churches. If the local school district cannot meet the school requirements for station personnel, a nursery, elementary school, and junior and senior high schools will be provided.

Since that academy area will be virtually a self-contained community, it must have utility and sewage disposal facilities, a hospital, fire and police stations, laundry and printing plant. Considerable road, street, and sidewalk mileage will be required.

• **Airfield construction**—Logically, one of the major features of the academy will be its airfield. The 8,800x200 ft runway will be operative 97% of the time, on the basis of the climatology of the region. It will lie in the general direction: south-southeast to north-northeast, with magnetic bearings of 163 deg and 343 deg.

Hangars and maintenance facilities will be built to take care of about 30 training aircraft, in addition to ad-

ministrative and transient planes. Aside from the runway, there will be considerable taxiway and parking area construction.

• **Appropriations**—Congress appropriated $15.3 million for Air Force Academy construction for fiscal 1955, which ends June 30 of this year.

About $4 million is currently earmarked for land acquisition and for planning and design. Something like $9 million worth of preliminary construction contracts are expected to be let this year. And about $1 million of rehabilitation work is nearing completion at Lowry Air Force Base near Denver—which has been designated the "interim academy" until the permanent academy is completed at Colorado Springs.

Congressional appropriation of adequate fiscal funds is held to be one of the key factors in the over-all progress of the $125-million project. As explained by Col. Albert E. Stoltz, director of the Air Force Academy Construction Agency (AFACA), the academy can be built in a minimum of three years, but progress will depend in great measure on the rate of appropriations.

• **What it takes**—Something of what it takes to create such an institution out of whole cloth might be expressed by a basic formula, which John P. Huebsch, deputy director of AFACA, expresses as:

R + AEC + L + D + T = USAFA, where . . .

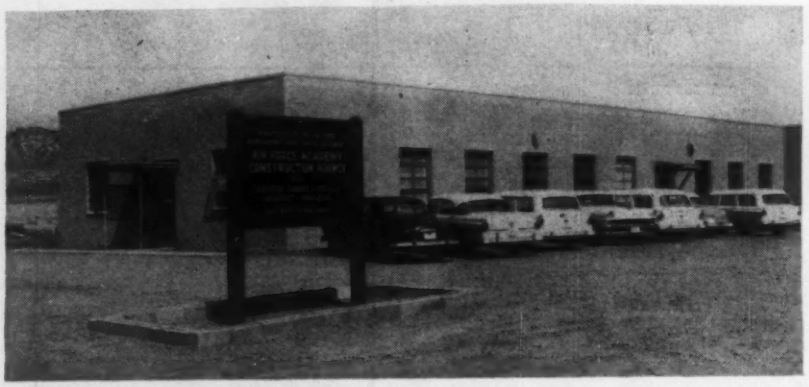
"R" equals the requirements and the various factors that influence their determination. "T" means translating numbers of people that will be connected with the academy, and what they will do, into actual facilities requirements—such as housing, training, education, recreation, etc.

The term "AEC" stands for Architect-Engineer-Construction capability to develop master plans, design plans and specifications, and then translate them into actual structures.

The term "L" represents "land" required for the academy; "D" stands for "dollars," and "T" stands for "time" required to do the job (estimated minimum, three years).

• **Land acquisition**—Acquiring the 17,400 acres of land that comprise the academy site is a joint undertaking of the State of Colorado and AFACA. In April of last year the state legislature created the Colorado Land Acquisition Commission.

The commission was authorized to spend up to $1 million for the acquisition of land by purchase or condemnation for subsequent donation to the federal government.



NORTH EL PASO ST., (Colorado Springs)—nerve center of field operations—is headquarters for the architect-engineers and the Air Force Academy Construction Agency.

The entire 17,400 acres—including existing improvements—will cost an estimated $2.4 million.

The academy site has an average elevation of 6,600 ft above sea level. It is roughly rectangular in shape, with the eastern boundary extending about 500 ft east of U. S. Highway 85-87 and the western boundary conforming to the eastern line of the Pike National Forest. The southern boundary line is about five miles north of Colorado Springs, and the northern boundary is just north of Cathedral Rock—a prominent landmark of the region.

By the end of the first week in April of this year 7,665 acres had been purchased. Average price per acre, including improvements, was $85, according to Col. James A. Barnett, in charge of the Operations Division which will also handle construction when it gets under way.

The 9,770 acres yet to be purchased are estimated to cost an average of $182 per acre, since these parcels are smaller and contain proportionally more improvements, including individual homes.

• **First contract**—Work under the first contract will include rough grading and embankment construction for the runway, taxiway and apron; diversion of a sizable stream that traverses the runway area; and relocation of three miles of the Colorado Springs-Denver U. S. Highway 85-87 which cuts through the eastern edge of the site.

Major quantities include: 16,700,000 cu yd of excavation and embankment; 85,000 sq yd of highway base course and asphaltic surfacing; 10,000 cu yd of riprap; 8,600 cu yd of portland cement concrete for drainage structures; 6,000 lin ft of 36-, 48-, and 54-in. drainage pipe; clearing 1,000 acres; and erosion control, seeding and mulching on 600 acres.

Solution of the diversion problem

TOP MAN ON THE JOB is Col. Albert E. Stoltz, director of AFACA.

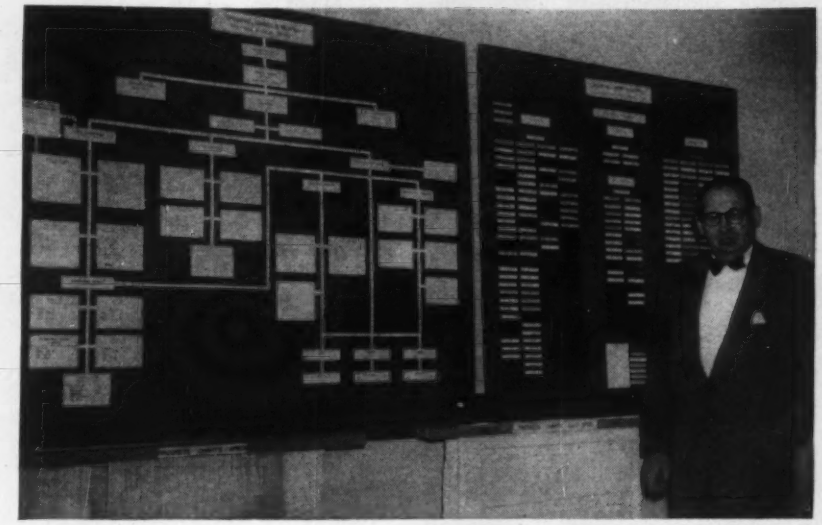
in this contract calls for the construction of 4,500 lin ft of 10-ft dia pressure conduit operating under a 70-ft maximum head. Also, a holding basin capable of retaining 2,400 acre-ft of flash floodwater for a period of 24 hr until it can be released through the pressure conduit. This conduit will extend beneath the runway area and the relocated highway.

• **Second contract**—The second contract is for grading, drainage and subbase construction for five miles of four-lane divided road with two 24-ft pavements, and about six miles of two-lane 20-ft pavement. No pavement is included in the contract.

Major quantities include: 663,000 cu yd of excavation; 142,000 tons of subbase material; 122,000 tons of crushed rock base; 7,300 lin ft of 18- to 54-in. drainage pipe; and 5,600 cu yd of concrete for drainage structures.

• **Contract procedures**—Many of the procedures for receiving bids and awarding construction contracts will be patterned after methods currently being used by other federal agencies.

In general, AFACA will award contracts on a lump-sum or fixed-price basis, explained Maj. T. E. Correll, in charge of the agency's Legal and Contracting Division. They will



WALL CHARTS delineating organizational responsibility and personnel assignment, aid Ed Merrill, director of engineering for the architect-engineers, in scheduling.

be let on a competitive bidding basis as plans and specifications become available from the architect-engineers, and if construction funds have been apportioned for the items concerned.

Contractors will have about two months to examine the work and prepare bids. This includes 30 days advance notice that invitations for bids will be issued; then an additional 30 days until sealed bids are received and opened.

Newspapers and about 235 trade journals will be supplied with copies of advance notices of invitation for bids, and invitations also will be displayed at all 28 Air Force Procurement District and Material Area Headquarters throughout the United States.

Design plans and construction specifications also will be made available at designated places throughout the country, or from AFACA by making a nominal deposit. If the plans and specifications are returned in good condition within 60 days after opening of bids, the deposit is returned.

Bidders will be required to post a bid bond of 20% and a performance bond of 50% of the total amount of the bid, up to $1 million. For contracts above $1 million these bonds are reduced on a sliding scale, percentagewise.

At peak operations the Engineering Division, headed by Col. F. J. Drittler, will have a total staff of 50 or more. One important function will be that of monitoring the field operations of the architect-engineer consultants who are designing the facilities and will furnish field engineering on construction.

• **Architect-engineers**—The firm of Skidmore, Owings and Merrill was appointed architect-engineer on Aug. 16, 1954. John O. Merrill has over-all supervision of his firm's activities which include preparation of designs, plans and specifications; field engineering; and inspection on construction.

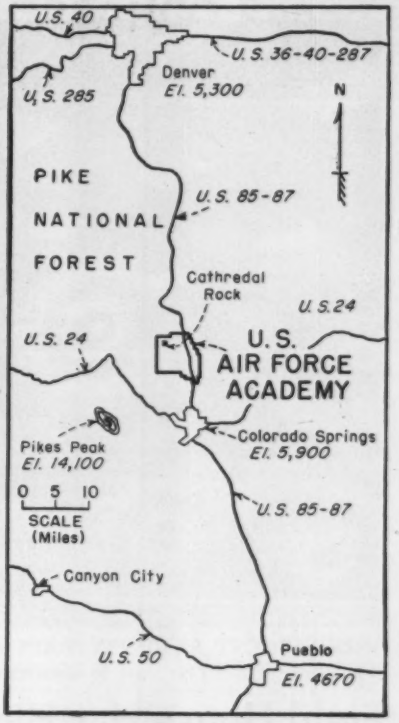
Associated with Skidmore, Owings and Merrill are Robert and Company Associates; Moran, Proctor, Mueser, and Rutledge; and Syska and Hennessy, who are advising on water, soils and foundations, and electrical and mechanical work, respectively.

• **Field office**—The Colorado Springs field office of the architect-engineers, located in the same headquarters building as AFACA, is in charge of Edward A. Merrill, as director of engineering, reporting to C. L. Tyler, general manager. Certain designs pertaining to the civil engineering phase of the project are being prepared in this office.

Ed Merrill expects to build up his design force to a peak of about 100 and his construction supervisory force to about 150, maximum.

• **History**—The first real step toward creation of an Air Force Academy was taken in 1949 when the late James B. Forrestal, Secretary of Defense, appointed a Service Academy Board to determine the need for such an academy. After much study and debate at the congressional level and by the Department of Defense and other government agencies, Congress passed the required enabling legislation last year, setting a top limit of $125 million as the total cost of the project.

Perhaps the most significant date in the brief history of the academy is June 24, 1954. For on that date, Secretary of the Air Force Harold E. Talbott, announced the creation of



the U. S. Air Force Academy—and designated the Colorado Springs site at the foot of the Rockies as its permanent location.

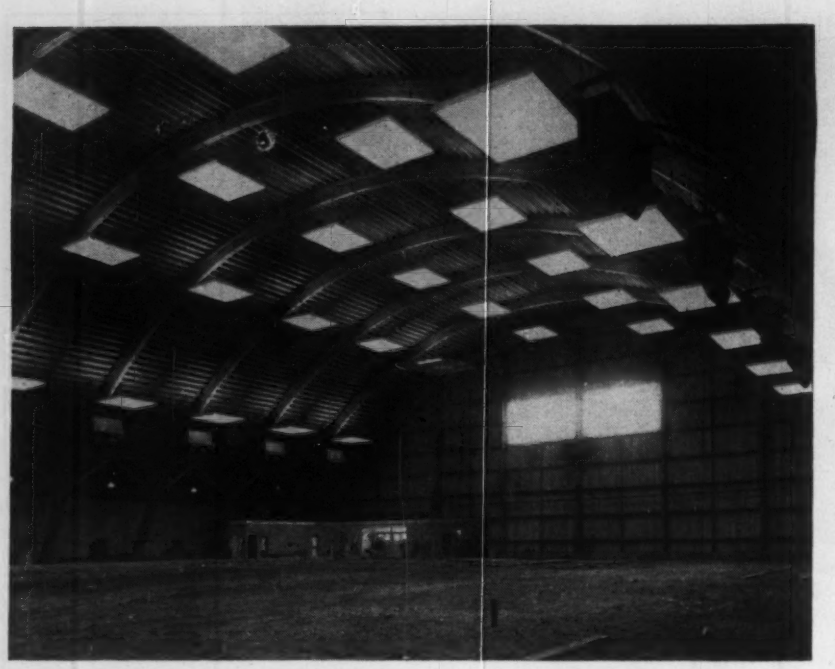
The Air Force Academy Construction Agency (AFACA) had already been created to direct planning, design and construction. Col. Leo J. Erler whom Col. Stoltz succeeded last January, was placed in charge of the agency, under the direct supervision of Maj. Gen. Lee B. Washbourne, Assistant Chief of Staff for Installations, USAF.

Consulting engineers were engaged to make surveys dealing with climatic and geologic conditions, availability of construction materials, and related subjects. Soil and foundation conditions were explored (ENR Apr. 21, p. 97), and preliminary designs were begun.

The construction agency started up its headquarters staff at Colorado Springs. Today it numbers about 70 military and civilian personnel.

• **Interim academy**—Lt. Gen. Hubert R. Harmon was named by President Eisenhower as the Academy's first superintendent. The million-dollar modification project now under way at the "interim academy" at Lowry Air Force Base east of Denver is scheduled for completion in time for the first class of 300 cadets to start sessions on July 1 of this year.

Under present planning, the permanent academy near Colorado Springs will be sufficiently complete to take care of the first three classes of cadets by the fall of 1957.



FLUORESCENT LAMP FIXTURES are 8 ft square and contain 14 lamps each. Thirty-five of them are used to illuminate the 40,000 sq ft playing area.

Field House Has High-Frequency Lighting

High-frequency fluorescent lamps are being used for the first time for general area lighting of a high-bay structure in a new field house at Union College, Schenectady, N. Y.

Besides setting a precedent in lighting, the nearly completed field house features the longest—254 ft around the curve—lamanated wood arches erected to date (ENR Nov. 25, 1954, p. 18). The span is 190 ft. (Record span is 201.5 ft at Montana State University field house.)

The 400-cycle lighting system, designed and developed by General Electric, illuminates approximately 40,000 sq ft of playing area at a maintained light level of 46 footcandles—said to be the highest for any field house and more than twice that of the usual indoor sports arena. A total of 490 eight-ft-long fluorescent lamps are employed in the system. Frequency is increased from the standard 60 cycles to 400 by means of two 30-kw rotating-type package-unit frequency converters.

Fixtures—largest ever used for high-bay lighting—are 8 ft square, each containing 14 lamps. Reported to weigh 110 lb. less than those in a comparable 60-cycle system, the fixtures are mounted at heights varying from 60 ft in the center to 34 ft on the sides.

According to GE, installation costs are about 10% less than an incandescent-mercury lighting system originally considered for installation at the field house. A 50% saving in annual operation and maintenance costs is claimed by the company.

In 1951, a 360-cycle lighting system was installed at the U. S. Department of Agriculture Plant Industry Station at Beltsville, Md., where plants are grown entirely under artificial light. All other pioneer high-frequency lighting had specialized application of this sort, until the Union College system was installed.

California Road Contracts Can Be Let During Winter

New California legislation permits state highway contracts to be awarded during the six months preceding the July 1 beginning of the fiscal year in which the projects are budgeted. Previously, awards could not be made until after April 1.

State Highway Engineer George T. McCoy hailed the change, permitting an earlier start of construction whenever weather and local conditions are favorable, as particularly important for jobs that can be completed in one season. He noted that many of the late fall finishing troubles can be avoided and that many projects can be completed that ordinarily have been interrupted by a winter shutdown.

With projects being advertised over a longer period prior to the opening of the construction season, McCoy pointed out that contractors would be in a position to give more time to examining projects and preparing bids. And, earlier award dates will permit stockpiling of materials during the winter for jobs that can be started in spring.

Authority Will Call for Bids On Kansas Toll Road Paving

The Kansas Turnpike Authority has announced it will take bids this month for the first paving contracts on its 236-mi toll highway from Kansas City to the Oklahoma line.

All paving work is expected to be put under contract by the end of July. Bids will be taken on 25-mi sections. First sections will be completed this year. Final completion date is October 1956.

Joseph Sorkin of Howard, Needles, Tammen and Bergendoff, the authority's consulting engineers, said contracts have been let for 140 bridges and 188 mi of grading and drainage. The authority plans to let contracts for an additional 110 bridges and 48 mi of grading and drainage by early June.

Both concrete and asphaltic paving will be used on the toll highway (ENR Dec. 16, 1954, p. 25). Paving will be reinforced concrete from Kansas City along a 55-mi stretch to the interchange south of Topeka. From Topeka to the Oklahoma line—a distance of 181 mi—heavy-duty asphaltic concrete will be used.

New Jersey Communities Seek New Water Supplies

Five municipalities in northern New Jersey have taken the first legal step toward development of new sources of water supplies (ENR May 27, 1954, p. 27). Acting through the North Jersey District Water Supply Commission, the cities and towns of Bayonne, Bloomfield, Cedar Grove, Elizabeth, Hillside and Kearny have applied to the Water Policy and Supply Council of the Department of Conservation and Economic Development for authority to divert 200 mgd from the south branch of the Raritan River near Hamden. This water would be pumped into a proposed reservoir in Round Valley in the north-central part of the state.

Kansas Legislators Authorize Water Study; Kill Ton-Mile Tax

Kansas is among the unprecedented number of states whose legislatures this session have adopted or are considering water resources bills. The Kansas bill empowers the governor to appoint a seven-member group to study need for legislation on water use rights, conservation and flood control measures.

Another highlight of the Kansas session was abolition of the state's 24-year-old weight-distance truck levy. Truck license fees were raised to compensate for a $3.5-million annual loss on the ton-mile tax.

Senate Road Bill

Subcommittee approves five-year plan to spend $21 billion on highways

The Senate this week handed President Eisenhower's $101-billion highway building program its first formal rebuff. The Senate's Public Works Subcommittee on Roads tossed aside the Administration program and approved a bill calling for an outlay by the federal government and the states of $21 billion over five years.

The measure was patterned after a bill introduced by Sen. Albert Gore, Tennessee Democrat, who is chairman of the subcommittee. Sen. Gore predicted that the full Public Works Committee would approve the legislation this week and that the Senate would pass it next week.

The Senate bill differed from the Administration-sponsored program in a number of important respects:

- It dropped entirely the Administration proposal to set up a Federal Highway Corporation to issue 30-year bonds to finance interstate highway construction.
- It called for a five-year program, instead of the 10-year program the President recommended.
- It suggested a boost in the federal tax on motor fuels of one cent a gallon to help pay for additional highway construction.
- It included a provision aimed at limiting the size and weight of vehicles on interstate highways.

• Fight in prospect—The Senate bill is not expected to sail through both houses of Congress without a stiff fight. Sen. Prescott Bush, Republican of Connecticut, called it "totally inadequate" and said it "dodges the issue of raising the large sums of money needed for a highway program." He served notice he would oppose it in the full committee.

In the House, too, opposition may be strong. The House Public Works Committee this week heard a number of state governors, including those most intimately concerned with development of the governors' report to the President on highway needs last year, testify in support of the Administration road program.

The Senate subcommittee recommendation for a boost in the federal motor fuel tax also will get stern scrutiny in the House. Legislation to make this proposal effective would have to originate in the House Ways and Means Committee where prospects for favorable action on it this session appear slim. The tax increase would make available about $600 million a year to help finance highway construction.

The subcommittee bill called for federal expenditure of $7.7 billion for construction on interstate highways during the five years beginning July 1, 1956. The states would provide an additional $2.5 billion under a 75-25 matching ratio.

For other types of roads, the federal outlay in the same five-year period would be $5.5 billion. States would provide an equal amount under a 50-50 matching arrangement.

The provision to limit the size and weight of vehicles on interstate highways specified that federal funds should be withheld from states that raised the limits after May 1, 1955, beyond the state-imposed limit effective on that date or the federal standard, whichever was higher.

Present law limits federal contributions for interstate highway construction to $175 million a year. It provides for a 60-40 matching basis with the federal government providing the larger sum. For primary, secondary and urban roads, it provides $700 million a year on a 50-50 basis.

The Administration highway program went to Congress early this year after a special White House committee headed by Gen. Lucius Clay had spent months studying the problems involved. It proposed that the federal government put up $27 million during the next 10 years for construction of the interstate highway system and finance the expenditure with 30-year bonds to be issued by a Federal Highway Corporation.

FPC Gives California Firm Permit for Power Project

Pacific Gas and Electric Co. has received, after long delay, a go-ahead for construction of its $73-million Kings River (Calif.) power project.

The Federal Power Commission, which issued a conditional permit for the project in 1951, entered the final order last week for the four-dam, 240,000 kw development.

In addition to expansion of PG&E's existing Balch plant on the north fork of Kings River, the layout includes three new units.

- The Wishown development—two dams, one on Helms Creek and one on the north fork of the Kings.
- Haas development—one dam on the north fork of the Kings.
- Kings River development—one dam on the north fork of the Kings.

Last obstacle to the permit was cleared when PG&E and irrigation interests, represented by the Kings River Water Assn., agreed on details of the utility's acquisition, delivery and storage of water.

ORSANCO Report

Commission says member states have adopted new industrial waste controls

The Ohio River Valley Sanitation Commission announced final adoption of an industrial waste control policy in a report to governors of Illinois, Indiana, Kentucky, New York, Ohio, Pennsylvania, Virginia and West Virginia, the states represented in ORSANCO.

The move, according to the commission, represents an entirely new approach to industrial waste control. It is a practical approach that heretofore has been lacking in the joint efforts of governmental and industrial agencies to solve a most expensive problem.

That each water-using industry presents its own unique problem of stream pollution has long been recognized, but it has taken more than two years of cooperative study by the commission and its 150-member Industry Action Committee to draft a policy agreed by all to be beneficial.

The new policy recognizes that river use varies from point to point for the full length of the stream and that the level of permissible pollution must safeguard water at the point of discharge.

For example, wastes containing 10 ppm of phenol discharged close to the point of intake for a domestic water supply would have disastrous effects upon potability of the supply, but a waste containing 100 ppm might be discharged 100 mi above the intake with no noticeable taste effects.

• Here's what they did—The committee drafted the policy so that it provides the basic requirements of modification and restriction of industrial waste applying to all contributors to valley streams. It insists that all waters must be "free from unsightly or malodorous nuisances due to floating solids or sludge deposits."

Additional control measures will be based upon studies now under way involving separate investigations of individual industrial plants. Control of their effluent will be dictated by the condition and characteristics of the stream at the point of discharge.

W. W. Jennings, chairman of the commission, called the report "one of the most complex and satisfying achievements of our interstate agency." He asserted that it now would be possible to "expedite industrial waste control in the same orderly and effective fashion that municipal sewage treatment requirements were established by the commission on the Ohio River."

Lone Bid Rejected

California units schedule opening of revised bids on dam job for May 23

The only bid submitted for construction of two of the three dams and powerhouses in California's tri-dam project was more than $1 million higher than the ceiling set by the Oakdale and South San Joaquin Irrigation Districts (ENR March 10, p. 27).

Directors of the two districts rejected the bid and announced that a revised bid invitation will be advertised for opening May 23. The bid submitted by the Arundel Corp., L. E. Dixon Co. and Guy F. Atkinson Co. was $32.9 million. The ceiling set by the districts is $31.8 million.

The revised bid invitation asks for a consolidated bid on the two units—Donnells Dam, tunnel, penstock and power plant and Beardsley Dam, power plant and afterbay dam on the Stanislaus River in the Sierra Nevada.

The new invitation stipulates the same maximum bid, but it states that an additional $1 million is available to the contractor as protection against quantity overrun.

The new invitation also provides for early completion payments. The power revenue received by the districts from Pacific Gas & Electric Co. if the project is in operation before the Dec. 15, 1958, completion date will go to the contractor. If work gets as much as one year ahead of schedule, new payments might total $1.9 million.

Construction is expected to be under way by June 15. The third unit of the $52-million tri-dam project, Tulloch Dam, will be started later with completion expected at the same time as the other two.

Donnells is a 288-ft arch dam, Beardsley a 280-ft-high earth fill. Capacity of Donnells powerhouse will be 54,000 kw. Beardsley powerhouse will have 10,000 kw capacity.

International Engineering Co., San Francisco, handled design, in cooperation with B. W. Goodenough, consulting engineer for the irrigation districts, and George E. Goodall, Sacramento, who designed Donnells Dam.

Voters Approve Bond Issue To Build Dam in California

Approval by voters of a $7-million bond issue assures construction of a dam for California's Salinas valley.

The 200-ft-high earth fill structure will be built on the Nacimiento River near Camp Roberts. It will back up a 12-mi-long reservoir with capacity of 350,000 acre-ft, of which 150,000 acre-ft is allocated for flood control, 190,000 for water conservation and 10,000 as a minimum pool for recreation and fish propagation.

Bechtel Corp. will handle design. A call for construction bids is slated for fall, and completion of the project is expected by late next year.

The dam will be 1,700 ft long at the crest. Width at the base will be 1,200 ft, it will contain 3,500,000 cu yd of earth.

Teamsters in Detroit Say They Will Strike This Week

The membership of AFL Teamsters Union Local 458 has voted to reject a pay offer made by the Detroit Lumbermen's Assn. The local announced it will call a strike this week. The strike could idle more than 25,000 construction workers in the Detroit area and cripple building programs now under way.

Florida Turnpike

Legislature approves bill for state-long toll road

The Florida legislature has approved a bill providing for construction of a state-long turnpike from the Miami area northward to near Jacksonville—and via the controversial inland route. Cost will be around $200 million.

Considering the violent opposition raised by several cities to the Florida Turnpike Authority's preference for an inland over a coastal route (ENR Mar. 10, p. 23), the project was approved by a surprisingly large margin.

Opposition emanating from Jacksonville, which originally was to be bypassed by the inland route by 15 mi, was stilled by an amendment putting the northern terminus within five miles of the city.

Another amendment authorizes a leg of the turnpike to be built to Pensacola for connection with a proposed Alabama turnpike, if such a project is proved feasible. A branch to the Tampa area is permitted by still another amendment.

The legislation directs the Turnpike Authority to build the state-long toll road to connect with the 103-mi bobtail—Hollywood to Ft. Pierce—turnpike authorized by the 1953 legislature. Issuance of the $74 million in bonds for this project has been held up by a technicality.

The 1953 enabling legislation specified that the southern leg should start in Miami's Dade County. However, a change in the Turnpike Authority's plans put the terminus at Hollywood, but in Broward County.

News Briefs . . .

Jet Interceptor Base

Initial contracts are scheduled to be let this summer for construction of an Air Force jet interceptor base on a 3,960-acre site, 11 miles north of Minot, N. D. A $5-million allocation has been made toward the project, which will be under supervision of the Omaha District Office, Army Engineers. Main runway will be 8,000 ft long, 150 ft. wide.

Toll Road in Iowa

Iowa has enacted a law authorizing construction of a 298-mi toll road from near Davenport to Council Bluffs. The act provides for establishment of a toll road authority to plan the project and issue revenue bonds for not more than $180 million to meet construction costs. The authority will consist of Gov. Leo S. Hoegh, who has supported the toll highway project, a member of the State Highway Commission and three others to be appointed by the governor.

Bridge Proposal

Mississippi and Arkansas highway officials are scheduled to meet May 17 to award an engineering contract for construction of a bridge across the Mississippi River at Helena, Ark. Seven leading consulting firms were invited to signify their interest in the project, their replies being due this week. The 14,000 ft bridge will be located about 6,000 ft downstream from an existing ferry crossing.

Los Angeles Sports Arena

California's Gov. Goodwin J. Knight has signed legislation which will permit the issuance of revenue bonds for the construction of a $7-million sports arena in Los Angeles. The enterprise will be a cooperative endeavor between the county of Los Angeles and the 6th District Agricultural Assn. which operates the Coliseum in Los Angeles.

Lift Slab Suit

United States Slab Corp. of Austin, Texas, has filed suit in the California Superior Court at Los Angeles against two firms and three individuals alleging trade mark infringement and conspiracy in unfair competition.

The complaint names the C. D. Wailes Co. and Western Concrete Structures Co. The individuals named: C. D. Wailes, Allen H. Stubbs, and Edward K. Rice of Los Angeles.

Dallas Storm Sewer

Horseshoe-shaped project 7,800 ft long will carry flood waters from city

A horseshoe-shaped storm sewer 7,800 ft long is being built to take flood waters from the Turtle Creek section of Dallas into Texas' turbulent Trinity River.

Harnessed upstream by Benbrook, Grapevine, and Garza-Little Elm reservoirs, the 700-mile Trinity still needs controlling as it passes through Dallas and a $10 million project of levees, pumping stations and storm sewers begun in 1953 is a little over 25% completed there.

Dallas' Turtle Creek pressure sewer is a reinforced concrete structure 18 to 21 ft in diameter. Collapsible steel forms are used in constructing the barrel; wood forms are used for the inverts. The sewer is constructed in alternate 25-ft long monoliths. Steel reinforcing is as large as 1¼-in.

Truck-mixed concrete from a nearby plant is used in this construction work. High frequency vibrators consolidate each pour. The crown of the sewer is finished by hand, and a membrane curing compound then is applied.

Depending upon soil conditions and development of adjacent areas, trenches for the pressure sewer, about 40 ft deep, have either shored or sloping sides.

Continuous dewatering of the work area is necessary. To assure water tightness of the pressure sewer where it crosses the levee, concrete collars and rubber water seals are used.

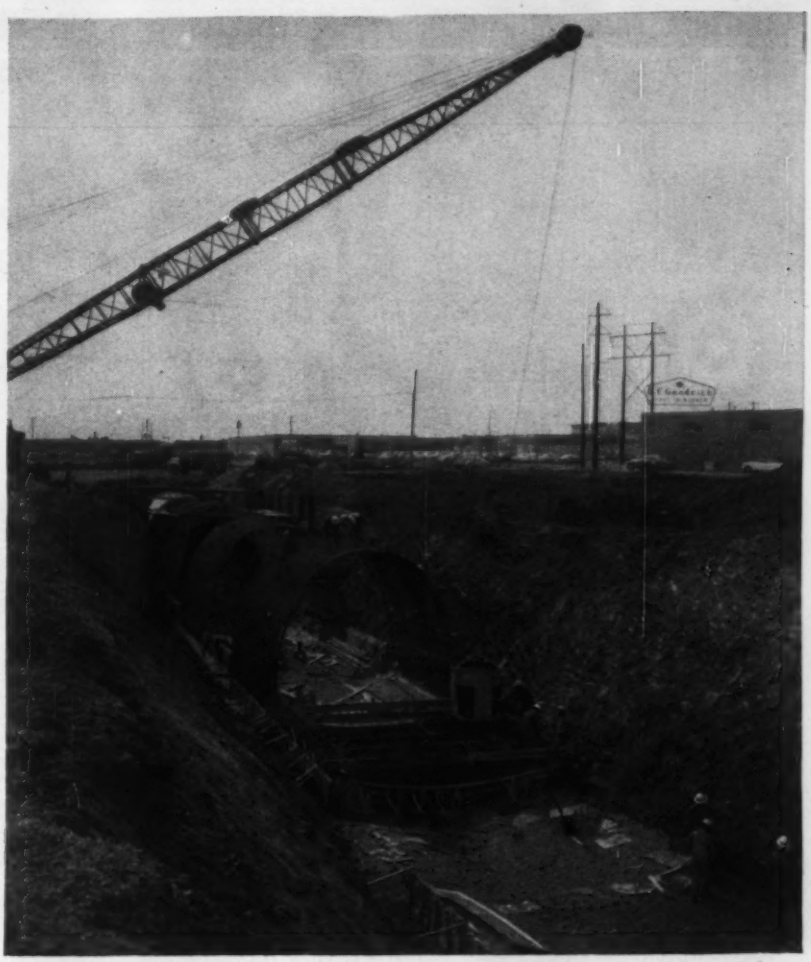
One part of the new pressure sewer crosses a 72-in. concrete sanitary sewer which could neither be taken out of service nor relocated. The pressure sewer will dip under this existing line; wooden forms will be used throughout this portion of the project.

Another part of the Turtle Creek pressure sewer project will tunnel beneath three railroads and busy, four-lane Harry Hines Boulevard.

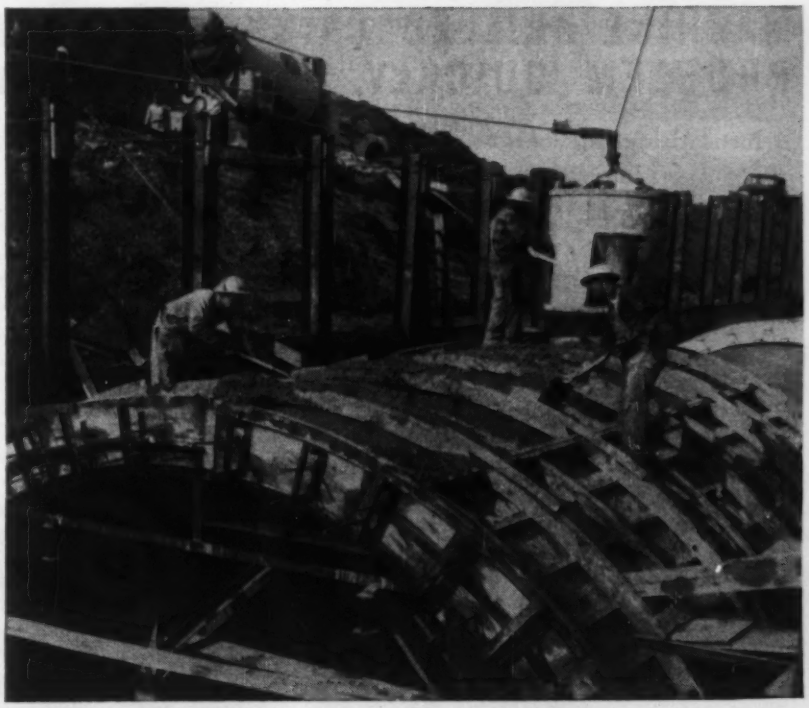
A collecting basin will be built on the upper end of the new pressure sewer. At the lower end, releases will be controlled by means of a gated outlet.

Contractors on Turtle Creek sewer are Whittle Contracting Company, of Dallas, $507,737; McKenzie Construction Co. and Whittle Contracting in a joint venture, $806,826.

The entire project is under direction of Col. Harry O. Fischer, Fort Worth District Engineer. Carl M. Stewart is project engineer for the Corps of Engineers.

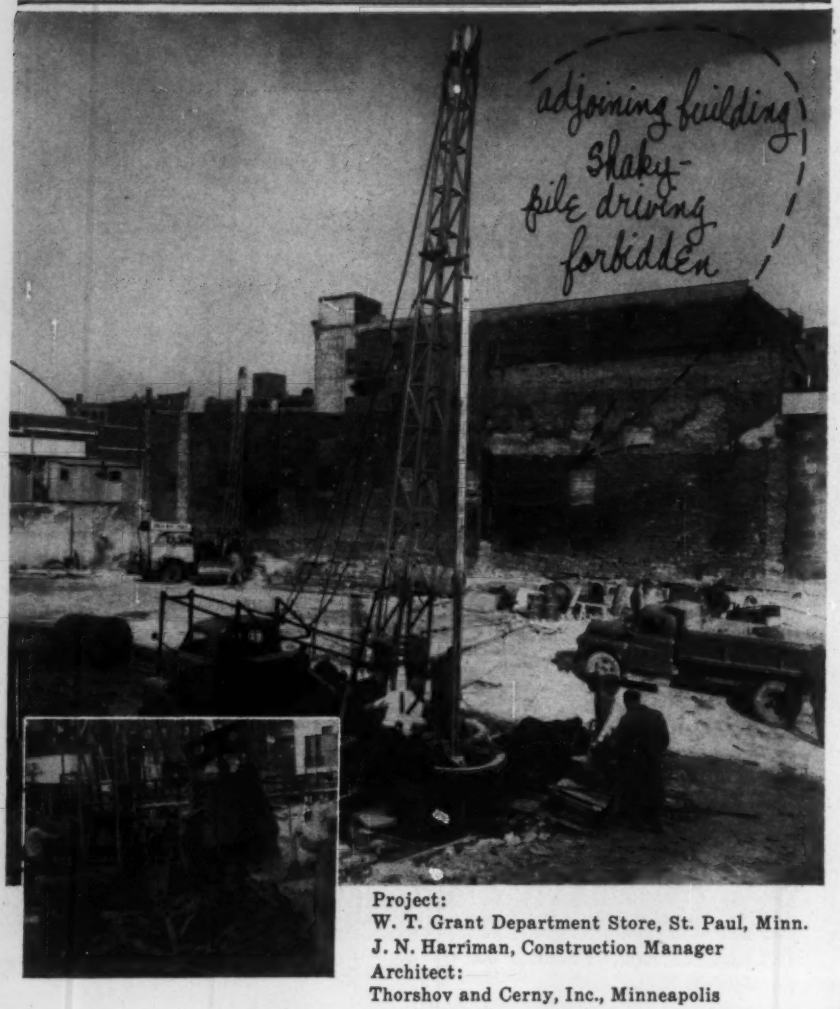


INVERT CONCRETING is job for wood forms, while crown-section steel is set for alternate pours.



CONCRETE FOR CROWN goes into collapsible steel forms.

ANOTHER PROBLEM SOLVED BY SPENCER, WHITE & PRENTIS



Project:
W. T. Grant Department Store, St. Paul, Minn.
J. N. Harriman, Construction Manager
Architect:
Thorshov and Cerny, Inc., Minneapolis

MACHINE-DRILLED CAISSONS SOLVE PROBLEM QUICKLY, ECONOMICALLY

A foundation going down 44 ft. to bedrock was required on this job. But soil contained much soft clay and the city authorities would not permit pile-driving, fearing that vibrations might make the adjacent building unsafe.

Solution? Two earth-boring machines drilled the 47 needed caissons in short order and at costs well below budget. A 10-ft. layer of quicksand posed a special problem but our engineers devised a technique to seal it off with steel casings.

Our earth-borers have perfect qualifications for jobs of this kind and they are always willing to travel. We have sped these easily-transportable machines to many different locations ranging from Minnesota to New Jersey, from the District of Columbia to the Province of Quebec. Where is *your* job located?

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CITY BY CITY

Planning a Pipeline

Baltimore—The Baltimore engineering firm of Whitman, Requardt & Associates has been hired to plan the $30-million pipeline that will divert Susquehanna River water to Baltimore.

The project is designed to provide Baltimore with a long-range water supply source (ENR Jan. 13, p. 32). At present the city is consuming almost 200 million gallons of water daily. The Susquehanna River connection, at full capacity, will bring in an additional estimated 220 million gallons.

The connection between Baltimore's Montebello pumping station and the Susquehanna will be about 37 mi long. At each end of the project there will be 3-mi tunnels. The remaining 31 mi will be an open-cut pipeline.

Planning the pipeline will take about two years, and it is expected that actual construction and land condemnation may take five more years.

The first step of planning will be preparation of an aerial map of the probable route. Under legislation approved last month by the Maryland General Assembly, the city has the choice of two routes, both roughly parallel and north of U.S. Route 40. After the route has been selected, there will be extensive subsurface explorations.

$100-Million Market

Philadelphia—Philadelphia's $100,-million food distribution center—the world's first completely integrated wholesale food market—has been approved by both the City Planning Commission and the U.S. Department of Agriculture.

Plans call for 51 buildings to be erected on a 420-acre site in the extreme southeast section of the city.

The Greater Philadelphia Movement already has received pledges of $180,000 toward a special fund of $250,000 needed to meet planning expenses. The money will finance architectural studies, research and design, as well as set up a staff for the corporation formed to develop the project (ENR March 3, p. 27).

The center will replace old and congested food distribution centers now located at various points around the city. Its construction also will transform an area of city dumps and wasteland into a planned industrial site. The new business attracted by

(*Continued on page 31*)

HERE'S PROOF THAT A-W GRADERS WITH ALL-WHEEL DRIVE HAVE 30% MORE POWER AT THE BLADE

To calculate Power-at-the-Blade, it is necessary to determine (1) skid pull due to traction and (2) maximum rim pull due to engine; using the formulas at the right, which are those used by manufacturers of tires and farm tractors.

The *effective* Power-at-the-Blade will be the *lesser* of the two figures. If you have more power than is necessary, and insufficient weight on driving wheels, you will slip the wheels, making SKID PULL the *limiting factor*. If you have insufficient power to slip the wheels, RIM PULL due to engine will be the *limiting factor*.

SKID PULL (DUE TO TRACTION)

$$\text{SKID PULL} = W \times f$$

W = WEIGHT ON DRIVERS
f = FRICTION COEFFICIENT BETWEEN TIRES AND GROUND

MAXIMUM RIM PULL (DUE TO ENGINE)

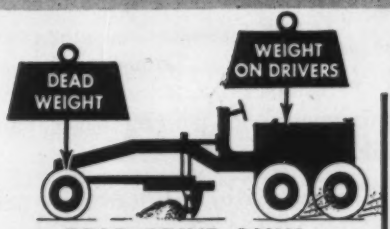
$$\text{RIM PULL} = \frac{T \times 12 \times R}{Y}$$

T = ENGINE TORQUE AT PEAK (INTERMITTENT RATING)
R = TOTAL RATIO, ENGINE TO REAR WHEELS
Y = LOADED RADIUS OF TIRE (INCHES)

EFFECTIVE POWER AT THE BLADE WILL BE THE LESSER OF THE ABOVE TWO FIGURES

Working in average dirt in first or second gear, all graders have more than enough weight to spin their drivers; therefore Skid Pull is the limiting factor, and the measure of comparative performance. The Austin-Western Power Grader, with its exclusive All-Wheel Drive, has 30 per cent more weight on driving wheels than any other grader; consequently moves 30 per cent more material . . . it's as simple and inescapable as that.

HERE'S WHY A-W GRADERS DELIVER MAXIMUM POWER



REAR DRIVE ONLY

No grader with a dead front end can possibly deliver maximum power at the blade. Weight carried on the idling front wheels of the conventional tandem-drive grader is *dead* weight, contributing nothing to traction—*lazy* weight, consuming power to no purpose. Every pound of weight not carried on a driving wheel *handicaps your horsepower.*

ALL-WHEEL DRIVE

On the Austin-Western Power Grader there are no idling front wheels—no dead front end to consume power and decrease efficiency. Every pound of weight rides on a driving wheel. Every pound is working weight—contributing 100 per cent to traction, utilizing the torque of the engine to best advantage, delivering maximum power where it counts—*at the blade.*

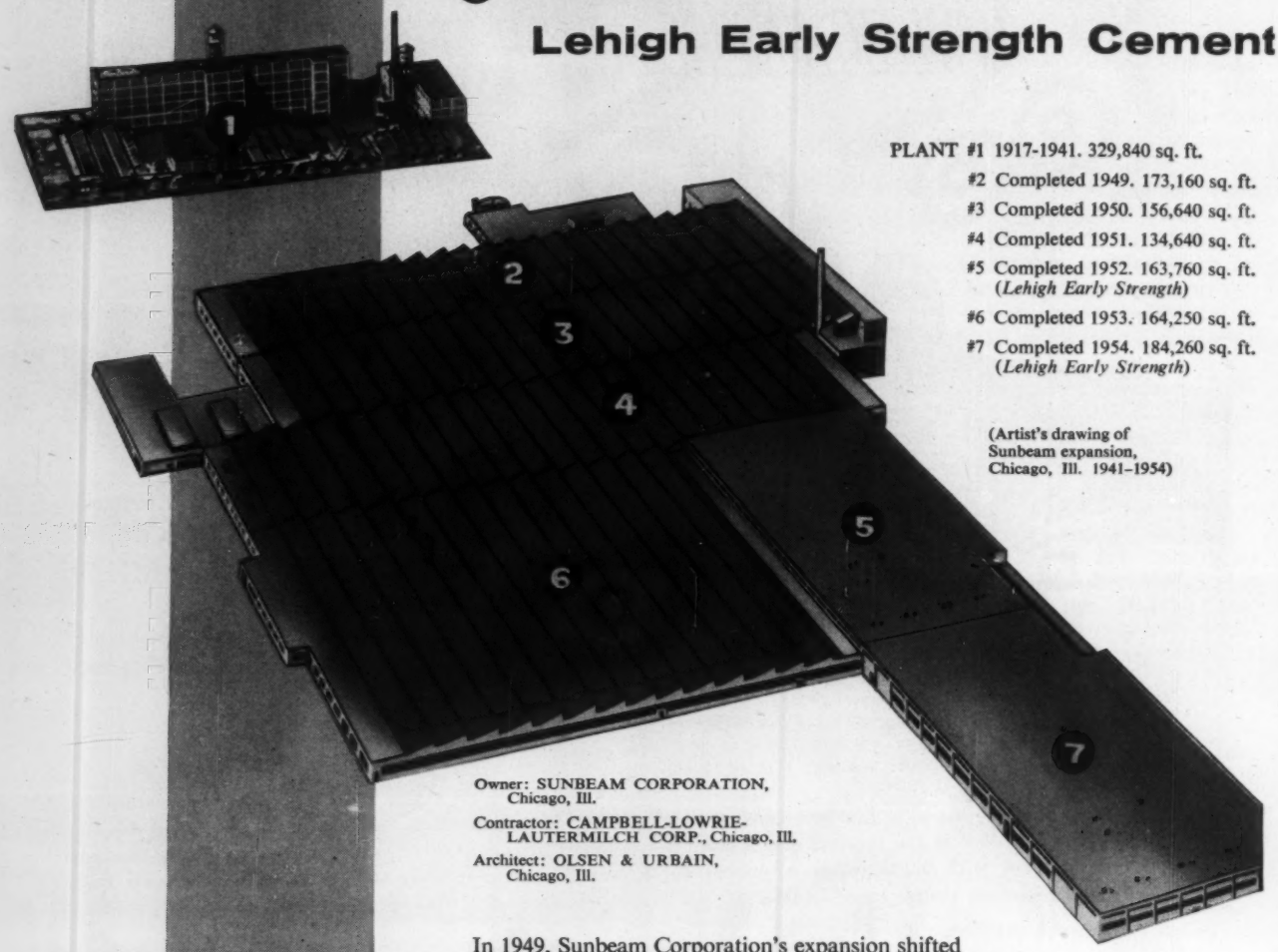
Austin-Western

Power Graders · Motor Sweepers
Road Rollers · Hydraulic Cranes

Construction Equipment Division

Manufactured by
AUSTIN-WESTERN COMPANY
Subsidiary of Baldwin-Lima-Hamilton Corporation
AURORA, ILLINOIS, U.S.A.

Sunbeam goes forward faster with
Lehigh Early Strength Cement



PLANT #1 1917-1941. 329,840 sq. ft.
#2 Completed 1949. 173,160 sq. ft.
#3 Completed 1950. 156,640 sq. ft.
#4 Completed 1951. 134,640 sq. ft.
#5 Completed 1952. 163,760 sq. ft. (*Lehigh Early Strength*)
#6 Completed 1953. 164,250 sq. ft.
#7 Completed 1954. 184,260 sq. ft. (*Lehigh Early Strength*)

(Artist's drawing of Sunbeam expansion, Chicago, Ill. 1941–1954)

Owner: SUNBEAM CORPORATION, Chicago, Ill.
Contractor: CAMPBELL-LOWRIE-LAUTERMILCH CORP., Chicago, Ill.
Architect: OLSEN & URBAIN, Chicago, Ill.

In 1949, Sunbeam Corporation's expansion shifted into high gear. Through careful planning and selection of the right materials, the architect and contractor kept this construction program rolling at a fast pace through all kinds of weather, year after year.

Their choice of Lehigh Early Strength Cement for midwinter work on addition #5, for example, resulted in *a saving of 35 days construction time and $14,000 in forms, curing and overhead costs.* Similar results were obtained from its use during cold weather construction of addition #7. On the other additions, built in moderate weather, the contractor used dependable Lehigh Portland Cement.

Whatever your requirements, there are Lehigh Cements to fit them. Our Service Department will be glad to help you with your specific problems.

LEHIGH
PORTLAND CEMENT CO.
Allentown, Pa.

LEHIGH EARLY STRENGTH CEMENT • LEHIGH PORTLAND CEMENT
LEHIGH AIR-ENTRAINING CEMENTS • LEHIGH MORTAR CEMENT

the center is expected to enlarge the tax base of the city and bring a reduction in the cost of distributing foods.

The Planning Commission reports that sewer lines, water mains and street paving to be provided by the city will cost about $6 million. In addition, the city is expected to foot part of the $5.7-million bill for acquiring and developing the site.

Water Guarantee

Greenville, S. C.—The City Council has approved construction of an $8.9-million watershed and reservoir in upper Greenville County.

This is the second major water supply plan to arise in upper South Carolina in the past few months. The first—a $3-million reservoir project of Ocone County—is still under consideration.

At present Greenville obtains its water from Table Rock reservoir, which has a storage capacity of about 12 billion gallons. The new facility will have a capacity of about 24.8 billion gallons.

The reservoir dam, to be built about 25 mi from Greenville, will impound waters of the North Saluda River and its tributaries. A 15-mi pipeline will run along the river valley and connect to existing transmission lines. Pipeline connections will be included for future booster pumping stations.

Low-Rent Leader

Chicago—Work has started on a $26-million low-rent public housing development—the largest project of its kind to go up in the city.

The Chicago Housing Authority's development will occupy 35 acres of ground near the north branch of the Chicago River. It will provide 1,925 apartments in 15 buildings of 7, 10 and 19 stories.

The project will be built in two stages. Construction of the first eight buildings, containing 859 apartments, plus a combination heating plant-management building, will be handled by Corbetta Construction Co. Contracts for the second stage—seven buildings and 1,066 apartments—will be awarded later this year.

Selective Service

Denver—Denver has abandoned the policy of allowing new areas immediately outside the city limits to connect with its sanitary sewer mains.

City mains already are handling near-capacity loads, and the small re-

(*Continued on page 32*)

Rex 3½ yd. Adjusta-Wate Moto-Mixer, pouring pavement in Milwaukee. Power, Continental Red Seal F140.

means Dependable Power

In addition to its large engines, Continental builds an outstanding line of heavy-duty air-cooled four-cycle models for industrial applications requiring 2 to 3 h.p. (AU series illustrated). Advanced engineering gives them easy starting, high dependability, and unusual lugging capacity at low speeds . . .

Options: patented and exclusive Contex® external ignition system, low-level ignition cut-off, 6-1 reduction gear, and other features. Available also for use on kerosene . . . For information on these models, address Air-Cooled Industrial Engine Division, 12800 Kercheval Ave., Detroit 15, Mich.

All through the construction industry, you find Continental Red Seal engines accomplishing two important things. One is furnishing power to do the world's work; the other, building prestige for specific makes of equipment. The Red Seal line includes models engineered to a wide range of building applications, and meeting those needs completely . . . turning more and more users of mixers, pumps, compressors and other specialized machinery to makes which feature this extra-dependable power.

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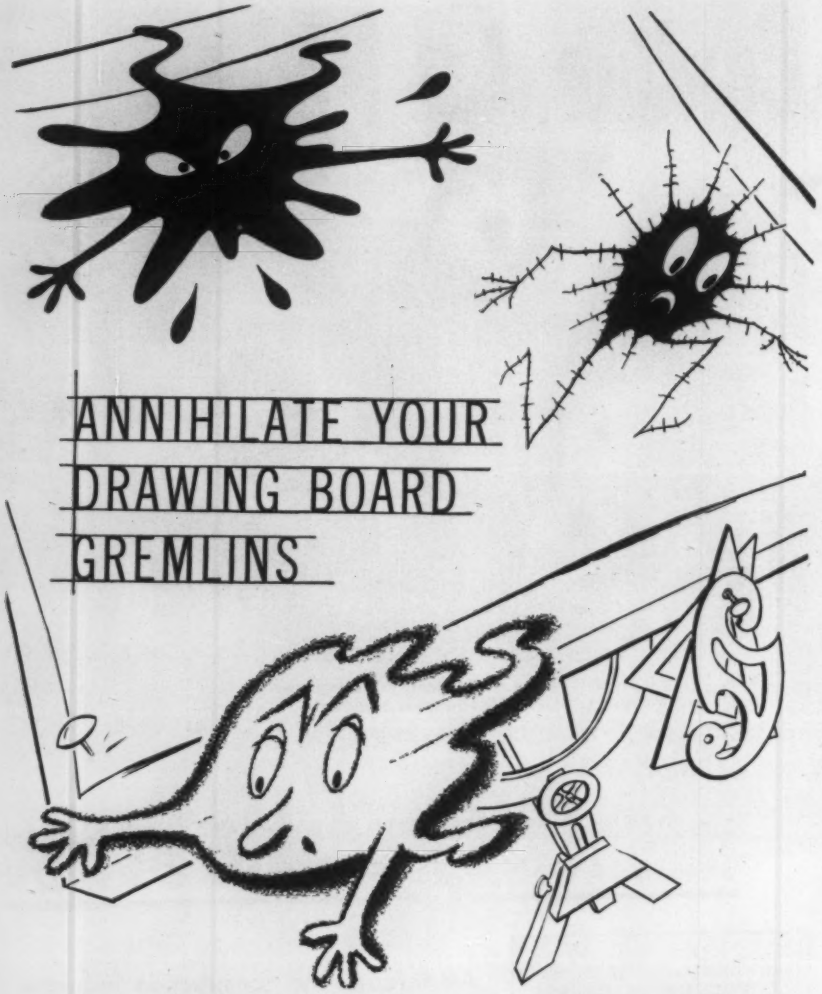
1252 OAKLEIGH DRIVE, EAST POINT (ATLANTA) GA.



NO BLOBBING, NO FEATHERING, NO FADE OUT

New, Improved Arkwright Tracing Cloths assure architects, engineers, draftsmen and designers of full protection against these three, ruinous, gremlins of the drawing board.

The result of continuous research, the new improved Arkwright tracing cloths give you greater transparency and the finest working surface. Your drawings will always have a clear, ageless permanency as Arkwright guards them from the ravages of time and the eraser.

Write for free samples! See for yourself, the improvements in the brand known as "America's Standard". Be sure that you use the rolls with the blue line. Arkwright Finishing Co., Industrial Trust Building, Providence, Rhode Island.

ARKWRIGHT
Tracing Cloths
AMERICA'S STANDARD FOR OVER 33 YEARS

serve still remaining will be saved for future growth within Denver.

In the past 60 days Denver has turned down requests for sewer connections to 560 acres of new subdivisions located at east, west and southeast fringes of the city. No curtailment of services is planned under existing contracts with 16 sewer districts outside the city. Additional sewer taps—some 150 a month—are being allowed within those established districts.

Approval of a $1.3-million bond issue to increase sewage handling facilities at the May 17 municipal election will have no effect on the new sewer policy. That money will be used to expand plants to handle the present load.

Parking Dilemma

Cincinnati—Cincinnati—already suffering from a chronic shortage of downtown parking space—is facing still a worse situation as a result of its expressway program. Construction of the third street distributor in 1957 will eliminate 1,350 parking spaces, and additional phases of the program will rule out several perimeter parking areas.

The city manager has announced that if private enterprise doesn't do something about the problem by the middle of June, the city will have to proceed with its parking program.

The downtown parking situation has been relieved slightly in the past several years because razing of city-owned buildings has provided temporary parking lots. This razing program, which is getting under way on a large scale, is expected to open up about 200 more temporary parking spaces.

Step-Saving Sidewalk

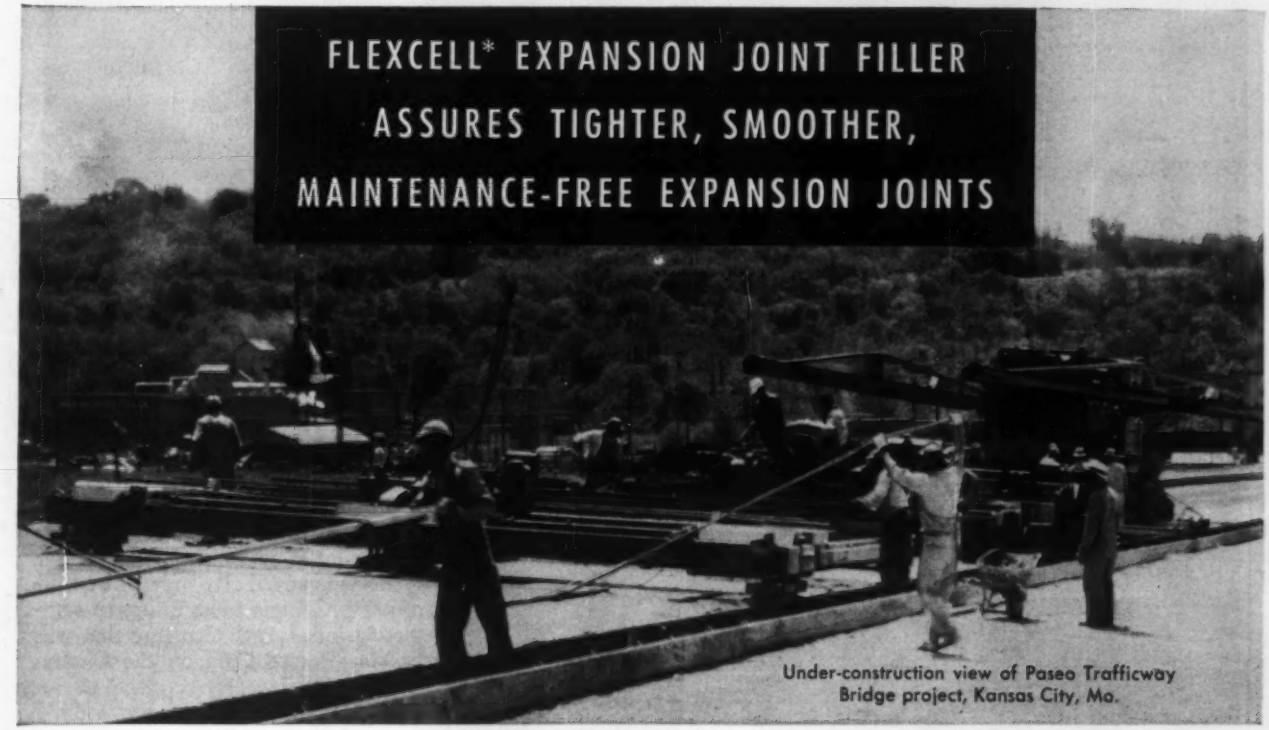
Philadelphia—Plans are being developed for installation of a $160,000 moving sidewalk at Philadelphia International Airport.

The project will be one of the first of its kind in the world to be installed at an airport. In Dallas, Texas, similar plans for a moving sidewalk have been announced as part of the $5-million Love Field terminal project (ENR March 24, p. 25).

Philadelphia's plan calls for a covered sidewalk, 600 ft long and about 3 ft wide, to take passengers and baggage from the airport's parking lot to the loading zone at the new $15-million terminal. Operated by a conveyor belt, the sidewalk will be similar to the one put in operation last year at the Erie station of the Hudson & Manhattan Railroad in Jersey City, N. J.

Smooth driving... coming and going... via the Paseo Trafficway Bridge

FLEXCELL* EXPANSION JOINT FILLER ASSURES TIGHTER, SMOOTHER, MAINTENANCE-FREE EXPANSION JOINTS



Under-construction view of Paseo Trafficway Bridge project, Kansas City, Mo.

Today's heavily-traveled traffic arteries require joints that are free from bulge and crevice, joints that stay closed and smooth without troublesome, expensive maintenance. And wherever concrete meets concrete, the perfect answer is Flexcell Bituminous Fiber Expansion Joint Filler.

Under severest traffic and climatic conditions, tough, durable Flexcell Expansion Joint Filler has proved a cost-saver in years of on-the-job efficiency. The reason is the extreme resiliency of its rugged cane fiber board core. When the concrete expands, Flexcell Expansion Joint Filler compresses without extruding; as the concrete contracts the filler springs back to normal, keeping joint neatly and smoothly closed. Laboratory tests prove that after compression to 50% of original thickness there is a "recovery" of over 70%.

Low in initial cost of both material and labor, Flexcell Expansion Joint Filler is easy to work with, provides finished joints without trimming. It is impregnated with a durable asphaltic compound to resist moisture, and is protected against dry rot and termite attack by the patented Ferox® Process. Will not become sticky in hot weather, brittle in cold weather. Its rough-textured surface makes a firm bond with concrete. It is ideal for work involving special cutting, tapering, fabricating.

Leading engineers, contractors, architects . . . many other Federal, State and Municipal agencies—all have long specified Flexcell Expansion Joint Filler. *You'll* profit by investigating the advantages of this widely-preferred filler . . . *before* you start your next job.

Mail the coupon below for full data on the benefits and economies of using Flexcell Bituminous Fiber Expansion Joint Filler for pavements, runways, sidewalks, curbs, gutters, driveways, concrete floors and roof decks. No obligation!

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Without obligation, please send me complete data and prices on Flexcell Bituminous Fiber Expansion Joint Filler.

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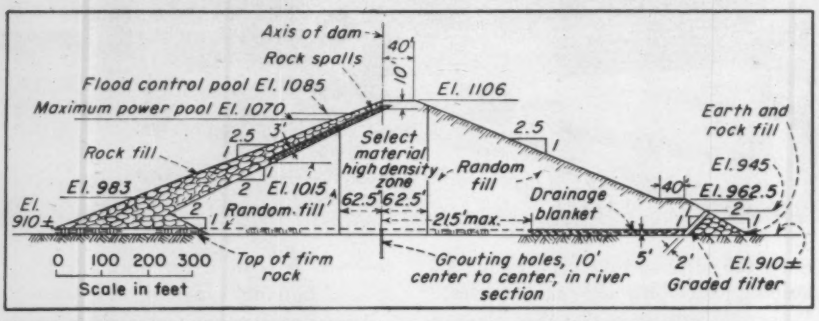
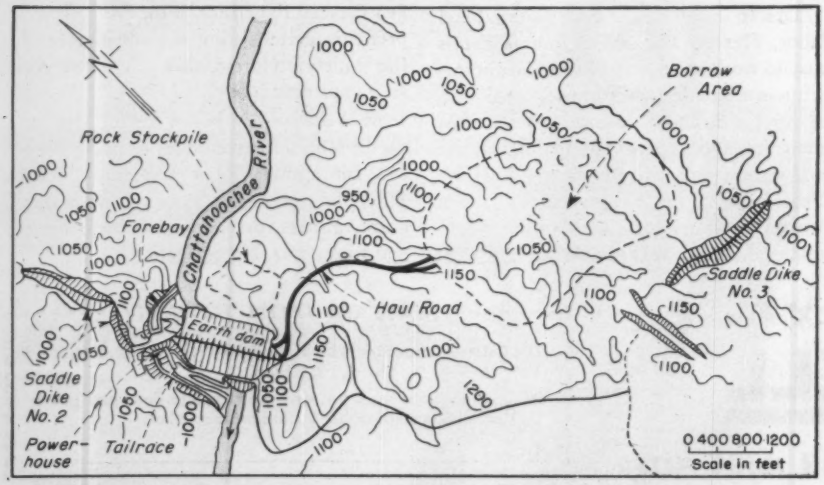
How to Build an Earth Dam in a Hurry



NOW NEARLY 70% COMPLETE, downstream face of Buford Dam includes rock toe wall at right abutment, where spillway discharge will leave powerhouse.



BORROW AREAS are about a mile from the dam site. How the different material will be used in the main dam is shown on the cross-section drawing.

Moving at a rate that often exceeds 2,000 cu yd of fill an hour, the heavy equipment of an Oklahoma contractor is shaking the red-clay-and-granite hills of north Georgia as he rushes to complete a rolled earth structure that will become Buford Dam on the Chattahoochee River.

For an average of 10 hours a day—every day that Georgia's uncertain spring weather will permit—J. W. Moorman & Son of Muskogee, Okla., keeps its highly trained crews and its fleet of 75 assorted vehicles rolling, over a mile-long haul road, delivering fill at a rate that exceeds 130 loads (at 16 cu yd per load) an hour.

• **Multi-purpose job**—Buford Dam (ENR Nov. 1, 1951, p. 147) will be a multipurpose structure, whose principal functions will include flood control, power generation, and contribution to the navigational use of the Apalachicola River, of which the Chattahoochee is a principal tributary. Located across a river canyon about 35 mi northeast of Atlanta, the dam will be one of four key Corps of Engineer structures on the Apalachicola system (Jim Woodruff, now under construction 100 mi upstream from the river's mouth, and Columbia and Fort Gaines dams on the Chattahoochee—not yet under construction).

In a 20-mile long lake, formed by the main dam and three saddle dikes and the many small valleys along the

river's course, the dam will store a total of 1,250,000 acre ft of water for flood control and navigation. It will have an installed power capacity of 86,000 kw.

Principal structure will be the rolled earth-fill dam itself, supplemented by the three earth dikes, comprising a total of 3,733,000 cu yd of compacted random and select fill, and 560,000 cu yd of rock facing on the upstream face of the dam, and in toe walls on both sides. A powerhouse will be located in a deep rock cut on the right bank, fed by steel penstocks in rock tunnels cut through the right abutment. The penstock tunnels are supplemented by a flood control sluice to take care of flood storage volume. Total concrete work, including the powerhouse and a concrete intake structure on the upstream end of the pentsocks, is comparatively small—70,000 cu yd.

• **Earthmoving is center**—But, with the penstocks completed and concreted, the rock cuts finished and wingwalls nearly so, and the powerhouse contract still to be let, the main interest is the earthmoving operation.

How do you move nearly four and a half million cubic yards of earth and rock for a contract price of $1.8 million on a schedule such as Moorman's crew has been maintaining—a schedule that has, in fact, put the contractor nearly a year ahead of contract?

How do you put down the difficult-to-handle random fill—composed of mica-schist, decomposed gneissic granite, clay, river sand—in accurate lifts of 12 inches, compact it, clear your borrow areas—and all the while fight weather that transforms the haul roads into soapy, slippery roadways, soil that quickly cuts scraper tires to nubs, sand and dust?

• **Here's how**—You do it by a combination of know-how, good operation, good crews, excellent cooperation with the engineers.

You start, for instance, by saving about $500 on each of 59 pieces of wheeled equipment by bringing them in by road over a distance of 1,000 miles from your last job (at Belton Dam, near Belton, Texas). According to S. H. Stephens, office manager, "roading" the enormous carrying scrapers and bottom dumps, the rock trucks, the pickups and the rest is worth the trouble it entails in getting special permits from state and local officials, and the problems of feeding and housing the crews enroute.

It's worth it also in advertising, according to W. B. Keene Jr., job foreman, who shepherded the monstrous caravan to Buford. "When we started, communities went to a lot of trouble

INGENUITY—Such as loading by dragline with truck in ditch so operator needn't boom up or swing saves minutes.

MAINTENANCE—Greasing while the machines are operating, and operator available goes fast, keeps up operating record.

POWER—Scrapers have heavy going in clay, weathered rock of borrow area. Team of two tractors halves time, increases loads.

INVENTIONS—Improvised sheet-steel "bumper" replaces drawbar on push tractors, saves on breakage, makes teamwork easier.

. . . Building an earth dam

to route us around town. But it was too good a show—after a while we were getting police escorts right through the business district. People told us it was more fun than a fourth of July parade."

You do it by assembling and keeping a finely-trained crew. Most of Moorman's 100 men have been with him more than four years, and most are earthmoving men by experience and preference, who started with work on the Mississippi levees. Each man has a machine that's considered his own—and they treat them with respect. The drivers fuel their own machines and are present during any necessary servicing. And long experience makes it possible for one of them to wheel his 26-ton scraper and pick up an out-of-place rock without even disturbing the compacted surface of the earth fill.

• **Maintenance**—There's an impressive list of equipment to take care of: Fourteen 16-yd carrying scrapers; eight bottom dumps (three of them with capacities of 20 cu yd, four with 18 cu yds); eight 12-yd end-dump trucks (for rock hauling); 14 crawler tractors of varying sizes; three patrol graders; two 2½ yd power shovels (used on the rock work) and one 3½ yd dragline; and miscellaneous trucks, water wagons, rollers, discs.

You do it with maintenance that makes use of every trick in the contractor's roomy bag.

For instance, on the back of a World War II vintage "six by six" you build a complete service station for greasing, equipped with two hoses, compressors, grease guns.

Then you number all your equipment, and service it in order, each piece each day, right on the job. And your grease crew gets so good that it can grease a 20-yd bottom dump truck in two and one-half minutes by the watch. That's a complete job, too, excepting for oil change.

You "fuel up" your crawler equipment as it works on the job, with a mobile tank truck—you put 15,000 gallon tanks in your borrow and service areas so that your scrapers and other wheeled equipment can service itself with slight delays.

You watch your tires—and pull them the minute your foreman or the driver notes any excessive wear. (You recap the pulled tires of course, for further use.)

If there's any engine work to do, you waste no time. Thomas Hise, your shop foreman, keeps fully rebuilt spare engines for each type of equipment in his shop. If there's trouble, the big machines roll into the shop, Hise and his men pull the old engine, put in a new one, and your machine is rolling again before the mechanics have started to figure out what's wrong.

• **And know-how**—The servicing on the job, rather than during nighttime layups (Moorman is working one 10-hour shift) is part of the know-how. Says Keene: "The greasing goes better when your machine is hot, better still while the driver is present to tell you of anything that might be wrong."

There are many other tricks too.

For instance, Moorman is using one dragline with a 3½ yd bucket, and one 3 yd shovel to load his eight bottom dumps. The dragline starts by cutting a trench—something like 12 ft deep—through which the bottom dump is driven for loading. It saves minutes, since the dragline operator can haul his bucket and dump almost in one motion—without having to raise his bucket and boom for each load, and swing his machine as he would if he loaded the trucks on the same level as the dragline.

The 16-yd carrying scrapers can break up and pick up most of the decomposed rock without the aid of shovels. But they need help in the sometimes floury, sometimes soapy soil of the borrow area. So you use teams of "push cats" to help your scrapers through—two heavy diesel tractors working in perfect synchronization with the scraper, bringing perhaps an additional 300 horsepower to bear on the load. This kind of action can increase the load of the scraper by as much as three cubic yards.

And, when you find you're breaking tractor drawbars in this pushing operation, you simply invent a heavy, bow-shaped pushbar to be bolted on the rear of the tractor (see illustration).

You find that you can't hold your haul roads against the wear of the heavy machines (its hard enough to hold the compaction on the dam itself—too many passes with the roller will break it down). So you build a solid base for the road with excavated rock, then put your clay atop and keep two of your patrol graders at work keeping the road in shape.

• **And more**—On the dam itself, the contractor uses a bulldozer, a four wheeled rubber-tired roller (loaded to a 65,000-lb wheel load), and a patrol grader in train, to level out the lifts (average 12 in.), compact (he gets about 95% compaction), and dress.

Early experience showed that the soil will wash badly—even after initial compaction—in one of the sudden heavy downpours common to the area. So the lifts are made starting at the downstream edge to insure that runoff will be directed toward the rock riprap on the upstream face.

Although the original plans called for construction of the rock toe walls first, then random fill at either side, then the select fill in the center, the contractor found—and the engineers agreed—that he could lay down the fill, right across the dam, at one crack.

Other wheeled equipment must stop for a while at least, when it rains. But the patrol grader never stops. The almost impervious material holds water on its surface (that's why it gets soapy) so the minute a rain starts, the graders start turning over the haul roads and the dam surface to provide footing.

In summer, you need water wagons to aid in compaction, lay dust. Moorman made himself two—by sealing up two of his 20-yard bottom dumps, equipping them with nozzles at the rear. Now in the rainy Spring, these wagons get no rest either—they supply water for grouting operations still going on in the left abutment toe wall.

Because of the speed and the loads, the earthmovers use a left-hand pattern on the haul roads—they come downhill fully loaded, driving on the inside, nearest the hillside. If they get out of control, the driver can turn them into the bank, with little fear of a sideslip that would take him into the steep-sided valley.

In order to deliver 130 loads of fill an hour, your equipment will have to make roughly six round trips an hour between borrow area and fill—a maximum total mileage of about 14 miles.

To do that, and allow time for loading (it takes about two minutes to load the bottom-dumps, about 30 seconds for the scrapers) you run your wheeled equipment at an average speed of 25 mph on the haul roads.

• **More to do**—The earthmoving job is now nearly 70% complete, according to Army engineers on the job—and will be finished in another two or three months of 10 hour working days.

But the powerhouse is still to be built, turbines installed. And relocation of the many state and local highways that cross the dam area will involve major bridge and road work.

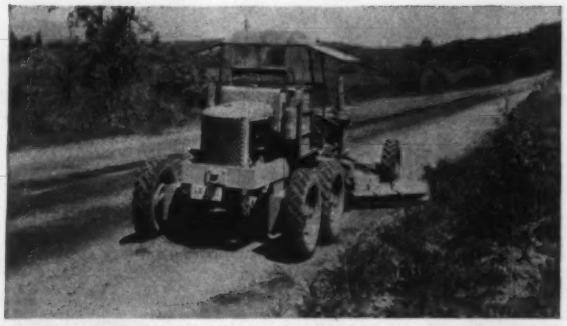
• **Credits**—Buford Dam is being built under general supervision of Col. E. H. Bisbort, Mobile District engineer. Charles A. Jackson, Jr. is resident engineer on the site for the district, with R. E. McElreath as field supervisor for layout and inspection and James F. Stewart, assistant resident engineer in charge of engineering.

J. C. Moorman is supervising the earthmoving job for his firm, with R. A. Smith as engineer.

Handle all these Jobs

WITH THE VERSATILE LOW-COST Model D Grader

With original cost but one-third that of a large grader, low operating cost and almost unlimited versatility, the Allis-Chalmers Model D Motor Grader is helping communities cut costs on a wide variety of jobs.



MORE MAINTENANCE PER TAX DOLLAR — You can have three Model D's for what one large motor grader would cost . . . maintain three times as many miles of road . . . keep your roads in good condition *all* the time.

ONE-MACHINE STREET DEPARTMENT — The versatile Model D with ⅝-yd, rear-end loader rough grades, spreads gravel, cleans up, loads trucks . . . gives many communities a one-man, one-machine street department.

CUTS EQUIPMENT INVESTMENT — Low original cost, low operating cost make the Model D today's biggest motor grader value. Compact and maneuverable, the "D" is a natural for close-quarter work.

KEEPS SHOULDERS SAFE — Model D shapes shoulder, blading windrow next to edge of pavement where rear wheels compact gravel . . . rear-mounted blade feathers out windrow . . . to keep shoulder safe and well-drained, *all in one pass.*

8,800 lb
50 brake hp
POWER-CRATER Engine
Leaning Front Wheels*
Power Circle Turn*

***Optional Equipment*
POWER-CRATER is an Allis-Chalmers trademark.

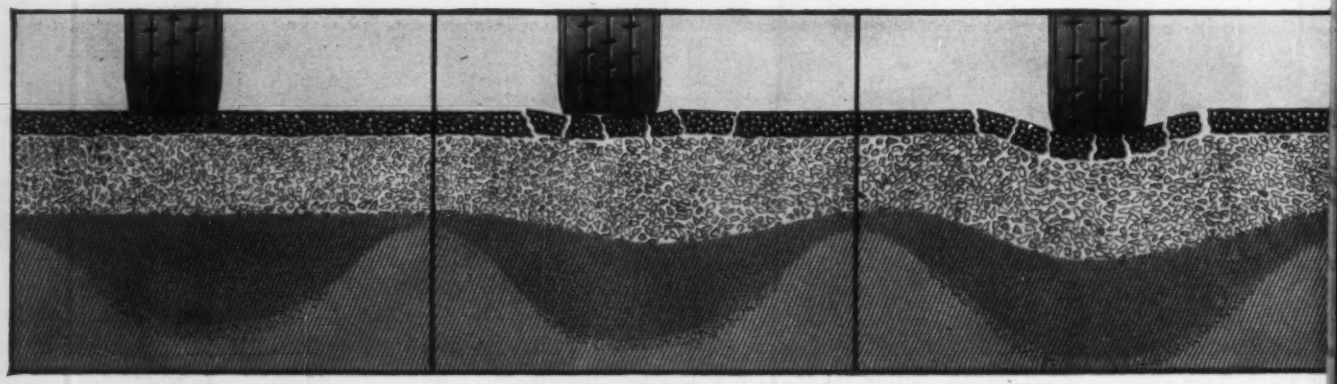
LET YOUR ALLIS-CHALMERS DEALER DEMONSTRATE

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1 U. S. A.

Build YOUR Roads with a FOUNDATION . . . at low cost with a SEAMAN

Sub-grade soil stabilization with the SEAMAN MIXER is economical, quick and easy to do — and adds years and years of life to the base course. It cuts maintenance so sharply that the dollars budgeted for road repairs will pay for many miles of new and better highways.

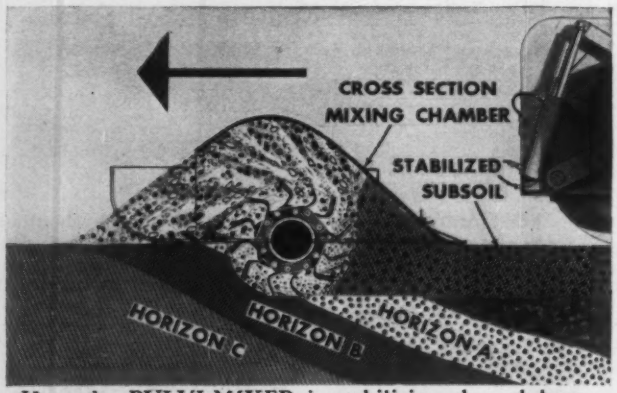
And, of course, if you up-grade the quality of your sub-base soil by mixing it with gravel or gravel and binder, your maintenance savings are proportionately larger and extend over an even greater number of years.



Sub-base failure is caused by soils of different natures reacting unevenly to moisture. Here a weak spot is developing in an *unstabilized* base. SEAMAN stabilization prevents this.

The breakdown of the soil in the sub-base through the disintegrating effect of moisture causes a localized movement and weakening in the base above.

As traffic pounds the base, cracks appear and the sub-base is weakened further by traffic loads and by permeation of additional moisture. The bridging effect of the base can no longer carry the load.



Here the PULVI-MIXER is stabilizing the sub-base by blending the different soils (soil horizons A,B,C) to attain a course which is uniform in moisture, density and thickness. Weak spots will not develop and the base above will withstand years of traffic punishment.

BLEND AND ASSEMBLE SUB-GRADE SOILS FOR MAXIMUM STRENGTH WITH THE SEAMAN

Sub-grade soils vary in physical characteristics and consequently in their reactions to moisture. It is their unequal movement and the presence of undesirable voids that cause heaving, pot-holing and breakup of the pavement. But one low cost pass with the SEAMAN blends and assembles those soils to uniformity in character and strength. This well-processed soil will reduce frost-boils, spring break-up and pavement failure.

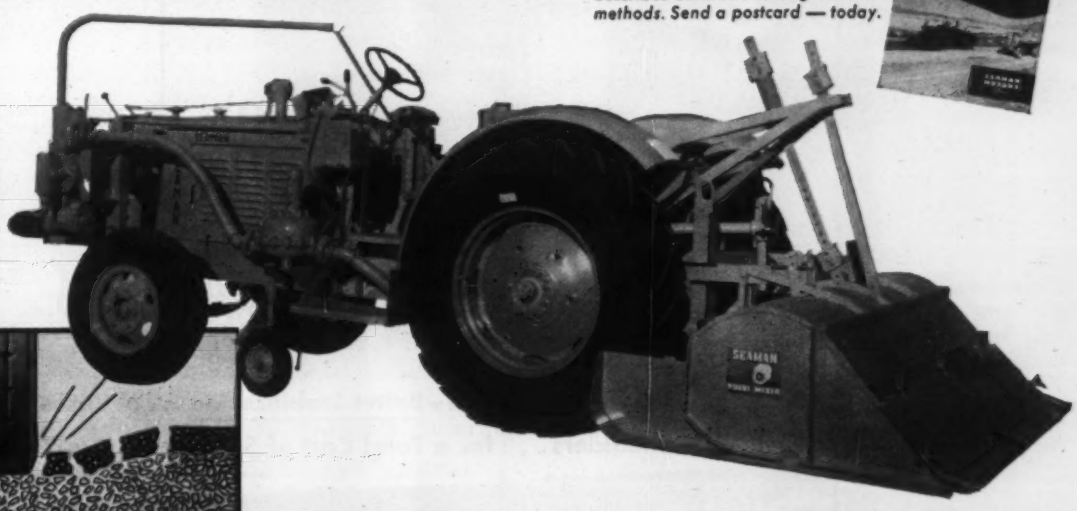
that will support a wearing surface!

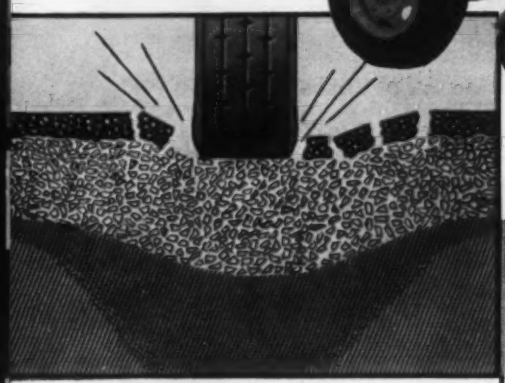
PULVI-MIXER

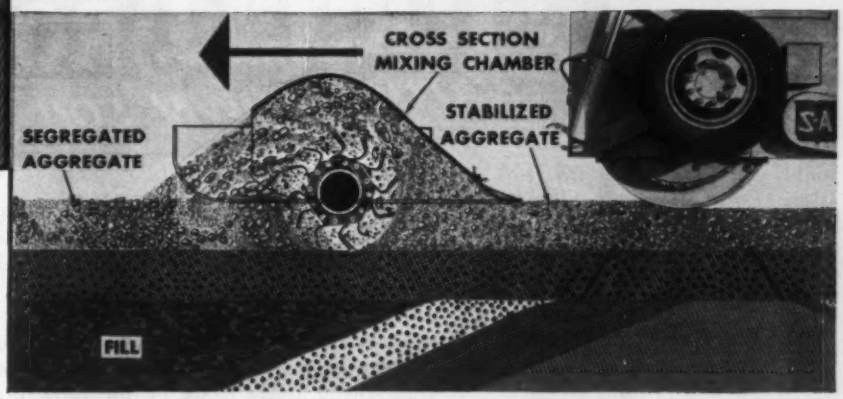
For a complete description of the SEAMAN TRAV-L-PLANT and the SEAMAN Self-Propelled PULVI-MIXER write for Bulletin TPS. It shows many field scenes and describes SEAMAN mixing methods. Send a postcard — today.

The Seaman TRAV-L-PLANT.

7 ft. mixing width; gasoline or diesel powered. Equipped with pump, tachometer assemblies, volumetric meter and spray bar for precision application of bitumen or water.







Complete breakdown of the base has started a chain reaction as more and more moisture permeates the fault and establishes repeated breakdown cycles along the width and length of the pavement.

. . . AND MIX THE BASE ITSELF WITH THE SEAMAN

No matter what materials — gravel, crushed stone, sand-clay, or native aggregates of any type; *no matter* what binders — bituminous, cement or chemical additives, — there is no equipment other than the SEAMAN that will blend, mix and assemble the materials so that the unstable segregation of coarse and fines is corrected. There is no other equipment that will so uniformly, quickly and completely distribute the binder throughout the mix. And SEAMAN-mixing costs are so low that only actual experience makes them entirely believable.

The SEAMAN PULVI-MIXER is processing the aggregates for the base course, correcting an always-present segregated condition — (the separation of coarse and fines). When the PULVI-MIXER has finished the work of blending and mixing the materials into a correct assembly, partially pre-compacted, the mix is ready for final rolling.

SEAMAN-ANDWALL CORPORATION

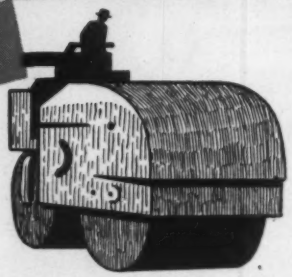
281 NO. 25TH ST. • MILWAUKEE, WISCONSIN

NATION NEEDS MORE ROADS!

TRAFFIC LOADS, SPEEDS BEING STEPPED UP!

GRAVEL SUPPLY SHORT IN MANY AREAS!

COSTS GOING UP!



Yes, the **PRESSURE** is on . . . **YOU!**

PLAN NOW . . . Better Stabilization . . . of Bases, Surface Shoulders . . . for a Total Cost of 5¢* per Square Yard with

STERLING ROCK SALT

"NATURE'S OWN SOIL STABILIZER"

STERLING ROCK SALT keeps your road mix "alive" . . . able to adapt itself and compensate quickly for excessive moisture or dryness, and sudden temperature changes. Water swells clay. But, in heavy rains, salt changes to brine, preserving the bond. In dry spells, salt crystallizes at the surface, preventing the clay binder from drying up.

Rock salt is soil's "thermostat" – the *natural* ingredient that keeps aggregates, fines and clay together in year-round permanence. Order your spring needs NOW or, for more information, send coupon.

**Actual cost-check from Hancock County, Ill.—$.0464*

INTERNATIONAL SALT COMPANY, INC.
INDUSTRIAL DIVISION, SCRANTON, PENNSYLVANIA

Get FREE Bulletins . . . "Better Highways Through Salt-Soil Stabilization"

Application methods and operational procedures . . . plant and road mixing . . . storage and handling hints . . . a wealth of helpful, practical on-the-job information.

IMPORTANT COUPON—MAIL TODAY

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INTERNATIONAL SALT COMPANY, INC., SCRANTON 2, PA.

☐ Please have representative call. ☐ Send complete file of "Better Highways" bulletins.

Name _____

Company _____

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SPENT SULPHITE LIQUOR is applied at a rate of 18,000 gallons per mile here in Rhinelander, Wis. Small windrows at side of road are then bladed in to form the desired cross-section. Steam rises from hot liquor direct from the pulp mill.

Gravel Glued Together With Sulphite

On unimproved roads in Wisconsin, sulphite liquor cuts down gravel replacement and potholes, saves $200 per mile

Francis Brunette
County Highway Commissioner
Brown County, Wisconsin

In Brown County, Wisconsin, wood pulp production plays a large part in the county road system through one of its waste by-products—sulphite liquor. This liquor is an adhesive produced in sulphite pulping by dissolving away the material cementing natural wood fibers together. In road maintenance the use of sulphite as a binder results in savings from two sources: stabilization of surface so that far less aggregate is lost, and decreasing grading costs through reduction of pot holes. The net savings have averaged $200 per mile for the country.

Experience shows that on the average untreated road some 200 cu. yd. more gravel per mile must be replaced yearly than on a sulphite treated road. Since in-place costs of aggregate in Brown County range between $1.25 and $1.75 per cu. yd. the annual saving in cost of gravel through use of the roadbinder amounts to about $300 per mile.

And a gravel road properly treated with sulphite roadbinder remains smoother than without and develops fewer potholes so that it remains in good condition with fewer gradings, say county engineers. Annual saving on grading, attributable to the use of sulphite liquor, averages about $40 per mile in Brown County.

From these total savings—$340 per mile—must be deducted the cost of hauling and spreading the roadbinder, a cost averaging $140 per mile. Brown County of course hasn't much worry on hauling costs, since the pulp mills are right there.

But the possible net saving per mile ought to make the use of sulphite liquor interesting even in road districts less ideally situated: The higher the price of gravel, the greater the savings that can be realized in a lower replacement rate of gravel by using a binder on the road.

• **Gravel savings—the key**—Savings on gravel have had an important effect in the general upgrading of town roads throughout the Brown County area.

There are about 600 miles of town and country gravel roads and 480 miles of paved roads in the road district. Where soil conditions are bad, the job of merely replacing gravel on untreated roads has in the past used up most of the township road money, leaving relatively little for building good paving foundations, and much less for laying blacktop.

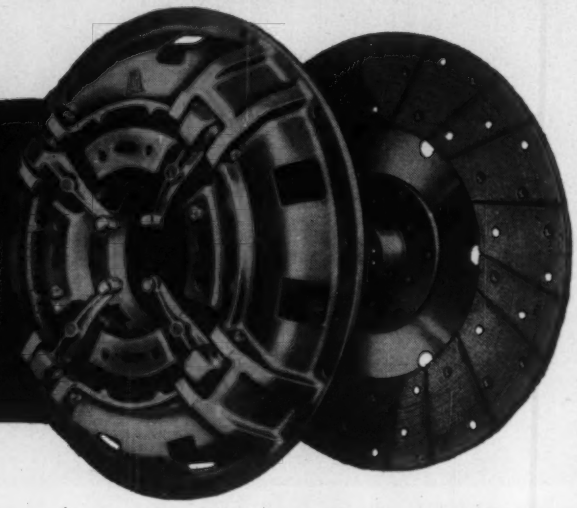
But with the use of the sulphite roadbinder, Brown County townships are conserving enough gravel to build up their unpaved roads to adequate thickness for a base. And, of course, the cash savings realized from the use of the binder allow a greater expenditure in placing more permanent types of road surface.

Whether the roadbinder is used to provide a stable base for top paving or merely to prevent dust and provide a smoother riding surface, application methods are the same. The road surface is smoothed flat with a blade, and windrows of approximately 2 in. are built along the edges to prevent run-off of the applied sulphite liquor. For local conditions, roadbinder is flowed on at a rate of 18,000 gallons per mile of 18 to 20-ft. roadway. Immediately after application, the windrows are worked back into the roadway and the desired cross section is developed by a road scraper.

Sulphite solids will dissolve in water, and rain will eventually leach them from the road surface so that for good results the roadbinder must be applied about once a year. A good gradation

You Get FULL TORQUE CAPACITY For Entire Life of Friction Material...

Lipe Constant Capacity CLUTCH



Just as long as there's the least bit of wearing surface left on the friction material, the Lipe Constant-Capacity Clutch maintains its torque capacity. A unique application of the toggle principle automatically compensates for friction material wear. The constantly increasing leverage of the toggle —which never goes over center—builds up pressure in almost direct ratio to friction material losses and compensates for fading pressure of expanding springs.

DESIGNED FOR HEAVY DUTY, LONG-WEARING SERVICE

PARALLEL CONTACT— because arrangement of the toggles assures a uniform pressure application pattern. Every square inch of facing area engages simultaneously, preventing highly concentrated heat areas and spot burning.

LIPE Constant-Capacity CLUTCH

- Engages firmly and smoothly
- Automatically compensates for wear of friction material
- Automatically compensates for fading pressure due to spring expansion and fatigue
- Balanced spring pressure through toggles maintains parallelism of pressure plate
- High thermal efficiency dissipates heat rapidly
- Internal cooling protects springs from overheating and loss of temper
- Automatically compensated pressure needs no adjustment

NO SERVICING— because these self-compensating, non-adjustable clutches insure automatic internal adjustment throughout the life of the clutch facings.

SOFT ENGAGEMENT— because the toggles absorb the initial energy of the springs... and because the speed of the toggle action fades as the pressure plate approaches the friction element.

HIGH THERMAL EFFICIENCY— because the massive plate, ribbed for rapid radiation, is cooled by generated air currents.

Write for specifications, performance data, and free service manual.

LIPE ROLLWAY — Lipe-ROLLWAY CORPORATION
Manufacturers of Automotive Clutches and Machine Tools
Syracuse 1, N. Y.

of aggregate sizes from fine to coarse, will minimize this leaching action.

• **Soil types important**—Where the percentage of clay and silt fines in the aggregate runs high, and when the surface is very dry, better results are achieved by applying roadbinder at half rate on the first pass, then applying the rest after the second blading.

A heavily traveled road gets two such treatments during the year, and much of the binding effect survives the winter so that applications in subsequent years can be at reduced rates ranging from around 15,000 down to 9,000 gallons per mile according to condition of the road.

The greatest increase in strength for clay soils is obtained with the first 1% additional weight of sulphite solids, according to the Lake States Roadbinder Association, Appleton, Wisconsin. Sandy soils, on the other hand, increase very little in strength until at least 1% of solids are added, and maximum strength improvement comes between 2% and 3%. Best results for clay soils are attained by applying roadbinder at a rate of one gallon per square yard per inch of depth (9,500 galons per inch of depth per mile of 15-ft roadway). For sandy soils these figures should be increased two or three times.

Some users of roadbinder find that since sandy soils normally cannot be expected to be as strong as soils containing a larger quantity of clay, an actual saving can sometimes be realized through adding clay to the soil rather than transporting extra quantities of roadbinder.

• **Value in paving bases**—In the long run the most important application of roadbinder is to build up the roadway base for construction of a paved surface. Brown County's road program calls for black-topping about 12 miles of road each year, and a three-year period is allowed for building up base before applying asphalt.

In 1953 the program reached its first three-year maturity period. This is now the standard procedure: the original 8 to 10-in. gravel base of these roads had been given two sulphite treatments in 1951. The 2-in. addition to the base had likewise received two sulphite treatments in 1952. Then in 1953, after spreading the final 2 or 3-in. increment of aggregate, sulphite liquor was applied with calcium chloride added at a rate of 8 tons per mile to increase the permanent moisture content of the base.

The final depth of sulphite treatment totalled 6 in. A standard blading, rolling and application of a single aggregate hot plant bituminous surface was then applied.

Trains to Kitimat Move Easily

. . . But Building Was Tough

. . . With Lots of Clay to Move

. . . And Logs for Subgrade

Early this year rail service to the Aluminum Company of Canada's Kitimat smelter was put on a regular schedule. Construction of the 40-mile link with the Canadian National Railways' northern main line at Terrace, B. C., proved to be equally as tough as other elements of the huge undertaking that in four years carved an industrial giant out of the wilderness (ENR, Aug. 12, 1954 p. 32). The CNR line provides the sole land link to the smelter and town previously reached only by air or water.

Adding to problems of difficult access and heavy weather that faced construction crews on other parts of the Alcan work was a treacherous clay foundation along much of the rail line.

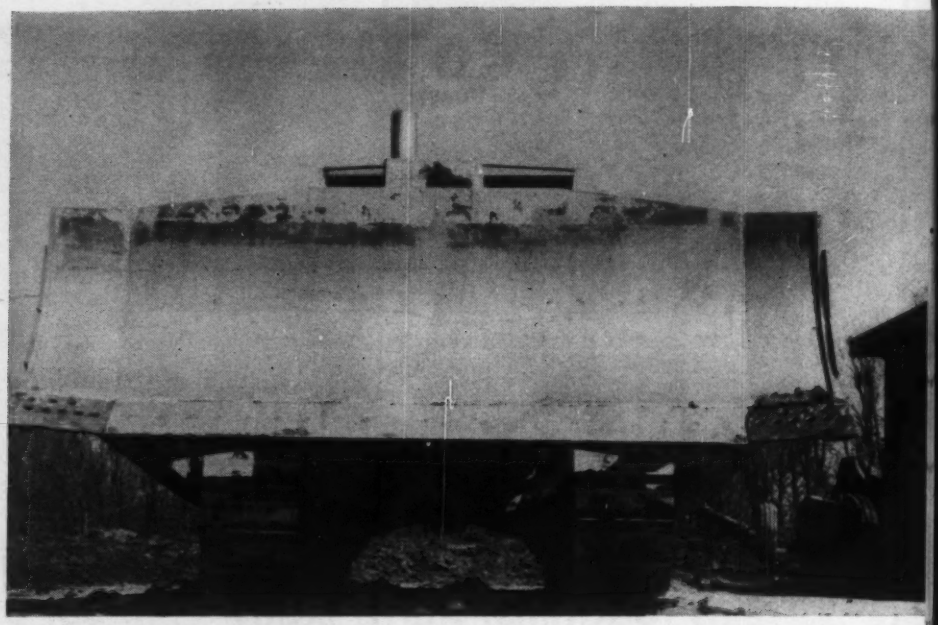
Campbell-Bennett Ltd., of Vancouver, contractors on the CNR work, actually lost a 2½-cu yd, 65-ton shovel in the muck. The machine was left overnight on an apparently solid, 60-ft wide gravel grade and found next morning swept over the grade.

Tractors were triple-teamed where the clay was most treacherous. Two units were anchored back-to-back on solid ground and attached to a middle crawler by bridles and winchlines. The added power dragged the middle unit back and forth with blade in play. And carrying scrapers were sometimes pulled by three tractors.

Log corduroying was needed to stabilize the grade where the alignment and the clay coincided. Logs, 25 ft long, were laid 2 or 3 ft below grade at a 45 degree angle with the centerline. The process was repeated—sometimes to a 6-ft depth before a solid bed was found. Corduroys of 2 or 3 layers were common.

Of course, not all the work was in mud. There was one cut through solid rock some 2 miles long with depth reaching 90 ft. Earth-and-rock excavation totalled nearly 3,000,000 cu yd with about 15% being rock excavation. There were nearly 16,000 lineal feet of culverts installed, 92,000 lineal feet of piles driven and almost 2,000,000 fbm of timber placed in bridges and trestles. Six steel bridges span the larger streams. Maximum curvature is 12 deg, maximum grade is 1.5% compensated.

Project manager Bernie MacDonald for the contractor, termed the two-year job one of the toughest his firm had ever done. Even so, the route was the simplest CNR location engineer W. H. MacIlroy could lay out. MacIlroy also served as CNR resident engineer on construction.



Behind this blade is the end product of a million man-hours of development. Behind it is . . .

The D9: Out of Testing—Into Full Production

It's here at last—nine years after the rumors started. Four days ago the D9 became the sixth and biggest machine in Caterpillar's crawler line, and very shortly—if you have roughly $30,000—you'll be able to go in and pick one up at your distributor's.

Available with either direct drive or torque converter, the bare crawler weighs about 56,000 lb (and the direct drive unit has a 60,860-lb drawbar pull) with adequate weight and traction. Both models are powered by a 286-hp. turbocharged diesel and deliver 230 hp at the drawbar.

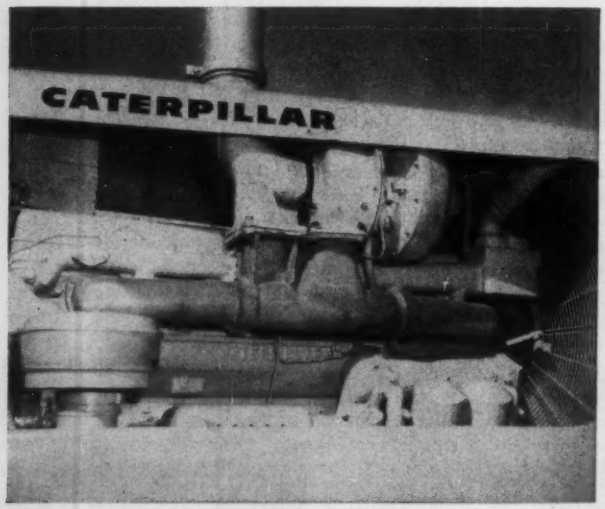
Not just another entry in the current race for greater size and horsepower, the D9 carries on its frame features that should influence tractor design for some time to come.

Your first look at the D9 will tell you that it's big, but there are other things that strike the eye. For instance, the right side of the hood is angled toward the rear for improved visibility. Too, the operating deck is one of the cleanest on any tractor, and the controls are grouped conveniently to take full advantage of the big job's nimbleness.

Closer inspection reveals the turbine-type supercharger tucked under the right side of the hood, an engine-driven brake cooling blower at the right rear of the engine and a new "cross flow" radiator that squeezes greater cooling capacity from the same frontal area.

Take a look under the D9 and notice that there is a fraction more than 21 in. ground clearance. Also, the suspension system is new. An equalizer bar permits track oscillation of 22½ in. with the outer ends of the bar resting on rubber cushions to absorb shock loads.

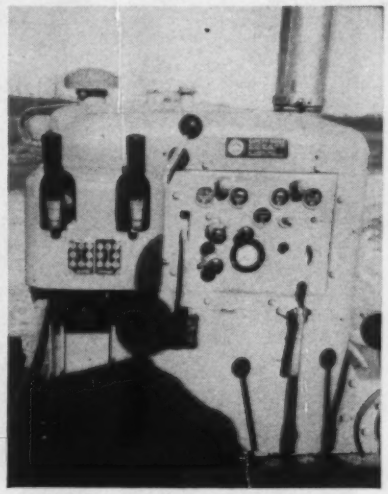
Back at the rear of the tractor you'll see a rugged single-position draw-bar and to both right and left the cover plates of the final drive filters. A separate gear driven oil pump in each of the final drive housings assures adequate lubrication for shafts bearings and gears, and an impregnated-paper



TURBOCHARGER consists of an exhaust-driven turbine wheel which drives a compressor to pump air to the intake manifold.

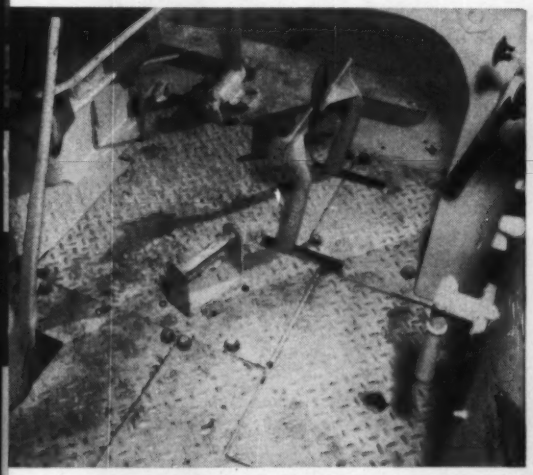
FABRICATED EQUALIZER BAR permits oscillation of 22½ in. The ends of the bar rest on rubber cushions to absorb shocks.

ANGLED HOOD increases visibility forward. Sloping fuel tank does same at rear.

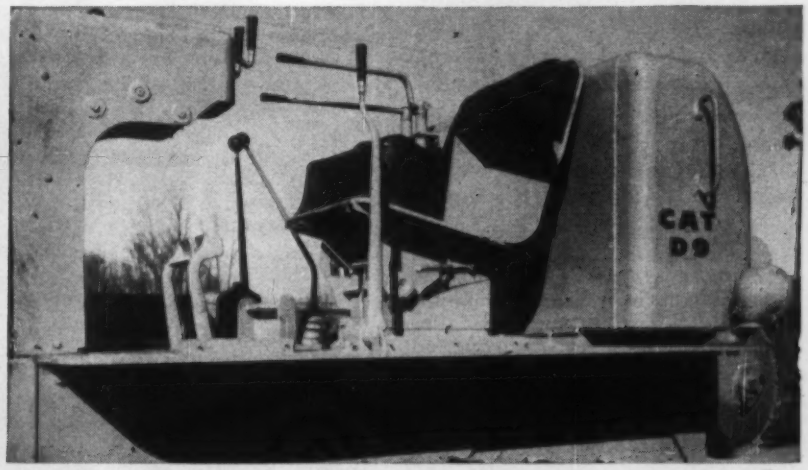


CONTROLS are conveniently grouped. Starting engine controls are on the panel.

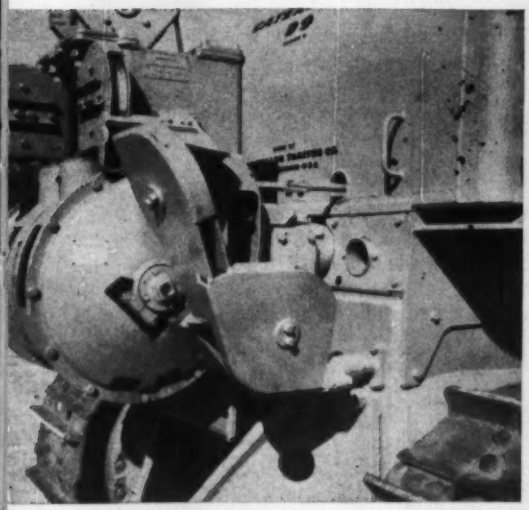
PUMP for control boosters is engine driven. Note filter for brake cooling air.



OPERATING DECK is clear for action. Footrests are provided for operator ease.

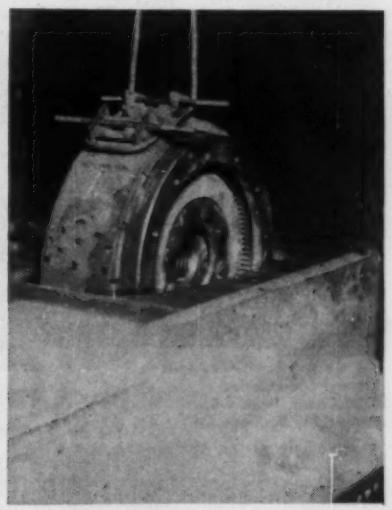


OPERATING SEAT has been designed for the operator. Adjusting controls permit it to be tilted up or down and moved back and forth for real armchair-type comfort.



LINKAGE for power control unit passes through tubes fabricated in the fuel tank.

TRACK ADJUSTMENT is accomplished through use of hand or powered grease gun.



UNIT CONSTRUCTION, typified by the steering clutches, eases maintenance.

GUARD YOUR CONCRETE AGAINST "HAIR CHECKS" AND "SOFT SPOTS"

This concrete will be *Strong* and *Dense* Because TRUSCON "TRU-CURE" Prevents Excessive Moisture Loss In Early Stages of Curing.

Truscon "Tru-Cure" is a liquid curing compound for concrete. It permits *proper* curing by preventing moisture loss especially in the early hours immediately following the pouring of concrete. This is the real *danger* period when heat or air movement causes too-rapid evaporation, resulting in surface shrinkage and "checking."

You'll Profit From These Advantages, Too . . .

- Saves clean-up after curing is done
- "Cures" at lowest cost per yard
- Requires minimum of equipment
- Protects against rain, sand and dirt
- Requires only one inspection
- Eliminates quick break-off of curing and sudden drying-out of surface

Available in clear or light-reflecting pigmented types. Meets state and other governmental specifications.

SEND COUPON BELOW FOR FULL DETAILS

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Division of Duvac & Raynolds Co., Inc.

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Detroit 11, Michigan

Rush full details on Tru-Cure to:

Name_____

Firm_____

Address_____

City_____ Zone____ State_____

EXPERIMENTAL D9, called the D9X, was one of a dozen that were tested on the job and at the proving ground before design of the production model was finalized.

A WIDE VARIETY of construction jobs were chosen to put the D9X's through their paces. The one above is shown push-loading scrapers at the Plattsburg Air Base, N. Y.

full-flow filter removes all foreign particles before they can do damage to finished parts.

Still at the rear, but up a little higher you'll note that the control linkage from the power control unit passes through tubes built into the fuel tank. Further, the bulldozer cable tube for the rear cable control unit is incorporated in the right hand main frame member for safety and appearance.

While you're at the back of the tractor, reach a hand up to one of the grab irons and hoist youself aboard the monster. A short walk down the track brings you to the operating deck and the operator's seat. Foam rubber cushions on the seat absorb the bumps and the whole chair can be tilted up or down or moved forward and back by means of easily operated controls. In addition, the seat can be raised or lowered by using a wrench.

While you're sitting there, start 'er up—all the starting engine controls are located right on the instrument panel. When you kick over the big diesel, you're in for a mild surprise. Besides adding horsepower to the engine, the turbocharger does a swell job of silencing exhaust noises. After you're in gear and rolling, try the steering brakes and clutches, but go easy—they're power actuated and require very little effort. Put the D9 through its paces

Turnpike Builders

THREE MARION 111-M SHOVELS SPEED MAINE PROJECT

Nearly 5 million yards of excavating, including a half million yards of rock, is the job of 3 MARION 111-M machines owned by The Nello L. Teer Company of Durham, North Carolina.

Extending the Maine Turnpike, their 4 cu. yd. dippers chew through rock, shale and borrow pits to keep a fleet of trucks on the move. One of the machines also works regularly as a 5½ cu. yd. dragline.

Get the facts about the production of 111-M machines where BIG yardage is needed and the digging is tough.

MARION • OSGOOD • GENERAL O-G

MARION POWER SHOVEL CO. • MARION, OHIO, U. S. A.

A Subsidiary of Merritt-Chapman & Scott Corporation

POWER SHOVELS FROM ½ TO 60 CUBIC YARDS
PILE DRIVERS • WALKING DRAGLINES

DRAGLINES • CLAMSHELLS • CRANES • BACKHOES
TRUCK CRANES • MOBILCRANES • LOG LOADERS

Your Confidence Is Justified Where This Flag Flies

There's one way to be sure when you specify plywood for form work . . .

LOOK FOR THE DFPA* TRADEMARK!

DFPA TESTED QUALITY

When you specify grade-trademarked fir plywood, you're sure of material manufactured under the rigid industry quality control program and independently quality-tested by DFPA* to protect the buyer. Here are grades expressly made for form work:

1. INTERIOR PLYFORM—made with highly moisture resistant glue for multiple concrete form re-use.

2. EXTERIOR PLYFORM—made with waterproof glue for maximum form re-use.

3. OVERLAID PLYWOOD—glossy, smooth, tough resin-fiber surface fused to Exterior plywood. Gives greatest re-use plus smoothest concrete. EXT-DFPA on panel means 100% waterproof glue.

EXT-DFPA

*DFPA—Douglas Fir Plywood Association, Tacoma, Wash., is a non-profit industry organization devoted to product research, promotion and quality maintenance.

for a while and you might easily get the impression that this tractor was designed by an operator—it's that easy to run.

• **Easy maintenance too**—But then if you witness the D9 being serviced, you might also get the impression that it was designed by a maintenance superintendent. The seven-roller track roller frame contains a built-in track adjusting mechanism that is actuated by an ordinary grease gun. Track guiding guards designed to prevent track jumping are built in as integral, standard parts of the track roller frame.

When disassembly is required, unit construction proves to be a boon. The steering clutch and brake drum assemblies can be removed separately without disturbing the bevel gear. The flywheel clutch assembly or the torque converter can be removed without disturbing the engine or the transmission. Similarly, the transmission barrel assembly can be removed without disturbing the flywheel clutch.

Brakes and steering clutches can be adjusted through removable top covers on the steering clutch housing, and brake hand assemblies can be replaced without removing the fuel tank.

If removal of the engine is required, it can be accomplished without disconnecting the gauge lines and starting engine controls since the gauge panel is mounted on the engine.

Where possible, parts common to other Caterpillar products have been used. One example is the starting engine, which is the same as that used on the D7, D8, DW15, DW20 and DW21 and many Cat engines.

But, not only has easy maintenance been designed in, a considerable amount of maintenance has been designed out. For example, in the engine, short valve push rods are possible because the camshaft is high in the block, and stationary oil jets provide a continuous stream of oil to cool pistons, camshaft and followers.

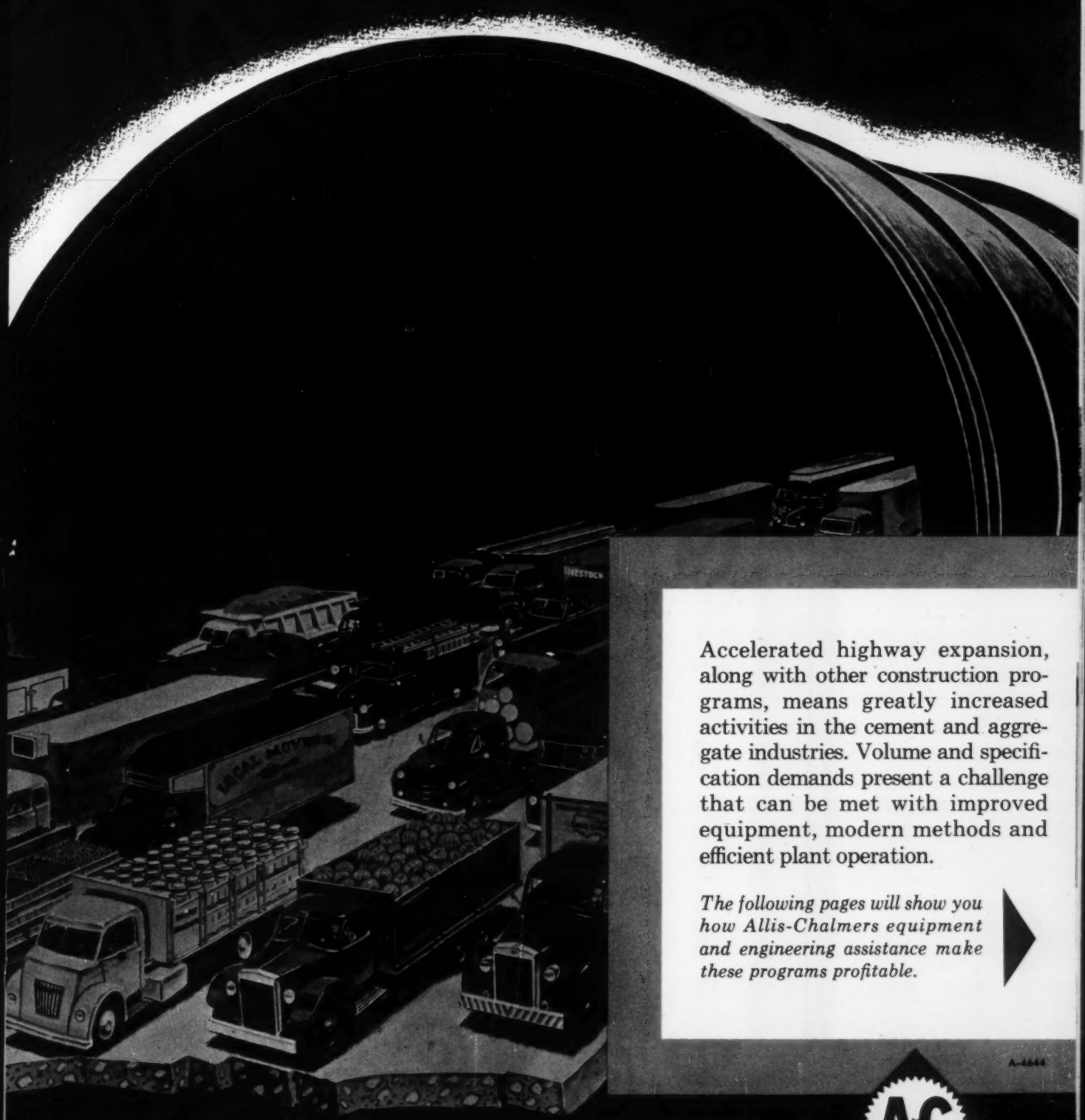
Life of steering brake linings is lengthened by pressurized air cooling. Air is forced through the tractor main frame to special shrouding in the steering clutch case to keep a steady cooling stream circulating through cored passages in the brake drums.

Actually the D9 was designed by not only operators and maintenance men but by contractors as well.

• **How it happened**—In 1952, after six years of component testing, two prototypes were put together and were put through their paces at the proving

(*Continued on page 53*)

WANTED—More Cement ...More Aggregates



Accelerated highway expansion, along with other construction programs, means greatly increased activities in the cement and aggregate industries. Volume and specification demands present a challenge that can be met with improved equipment, modern methods and efficient plant operation.

The following pages will show you how Allis-Chalmers equipment and engineering assistance make these programs profitable.

A-4644

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

Milwaukee 1, Wisconsin

How ALLIS-CHALMERS Helps

ENGINEERING HELP for plant operators and consultants

Ahead of you lie what could be your most profitable years. Is your plant ready to handle the volume? Is your plant geared to meet rigid specifications, economically? The best way of finding out is to get in touch with Allis-Chalmers for an expert evaluation of your present processing operations.

Why Allis-Chalmers? — No other company builds as many types and sizes of integrated processing machinery, power generation and utilization equipment. In examining your problems, Allis-Chalmers is not only concerned with correct application of machinery but with overall plant efficiency . . . ways and means of making existing as well as new equipment "team up" to produce maximum volumes of desired products at lowest cost.

Valuable Assistance for You or Your Consultant — Flow and plant design, pre-recommendation research and pilot plant testing, expert installation and service are all available from Allis-Chalmers, a company with over a century of experience in designing, building and applying processing machinery.

Unbiased Recommendations — Whether you operate a small pit or a complicated production system, the facilities and experience of Allis-Chalmers are at your disposal. And Allis-Chalmers broad scope of integrated equipment permits making unbiased recommendations, dictated entirely by your specific needs.

Service Everywhere . . . At All Times — Allis-Chalmers interest in your problems does not end with the installation of equipment. Laboratory facilities, periodic check-up, maintenance and fast emergency parts service are yours continuously through your nearby Allis-Chalmers representative.

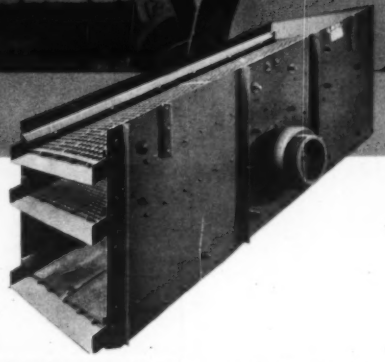
Allis-Chalmers Rotary Kilns for Cement and Lightweight Aggregate Production

Cement operators have long acknowledged the superiority of Allis-Chalmers rotary kilns—superiority that is reflected in long-term dependability as well as low-cost operation and maintenance.

Efficient kiln design is a result of Allis-

Hydraulically Adjusted Crushers Afford One-Man, One-Minute Product Control

Most Allis-Chalmers gyratory crushers are supplied with hydraulic adjustment which provides precise product size control by the flick of a finger. Compensation for wear and emergency unloading are controlled in the same manner. Other Allis-Chalmers crushers include a broad range of jaw crushers, roll crushers, and multi-impact hammermills.



Vibrating Screens for Every Application

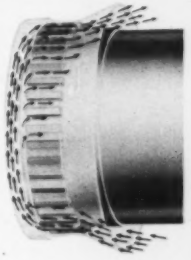
Allis-Chalmers builds a complete line of vibrating screens, including units for scalping, medium and fine separation, wet or dry screening, rinsing and dewatering.

Cement and Aggregate Plants

★ *Increase Volume*
★ *Meet Specifications*

Chalmers specialized engineering and the experience gained in building and applying hundreds of kilns in the last 50 years.

Allis-Chalmers all-welded rotary kilns are built in standard and special sizes for a wide variety of uses, including cement manufacturing and the production of lightweight aggregates, lime, refractory materials, fertilizers and chemicals.

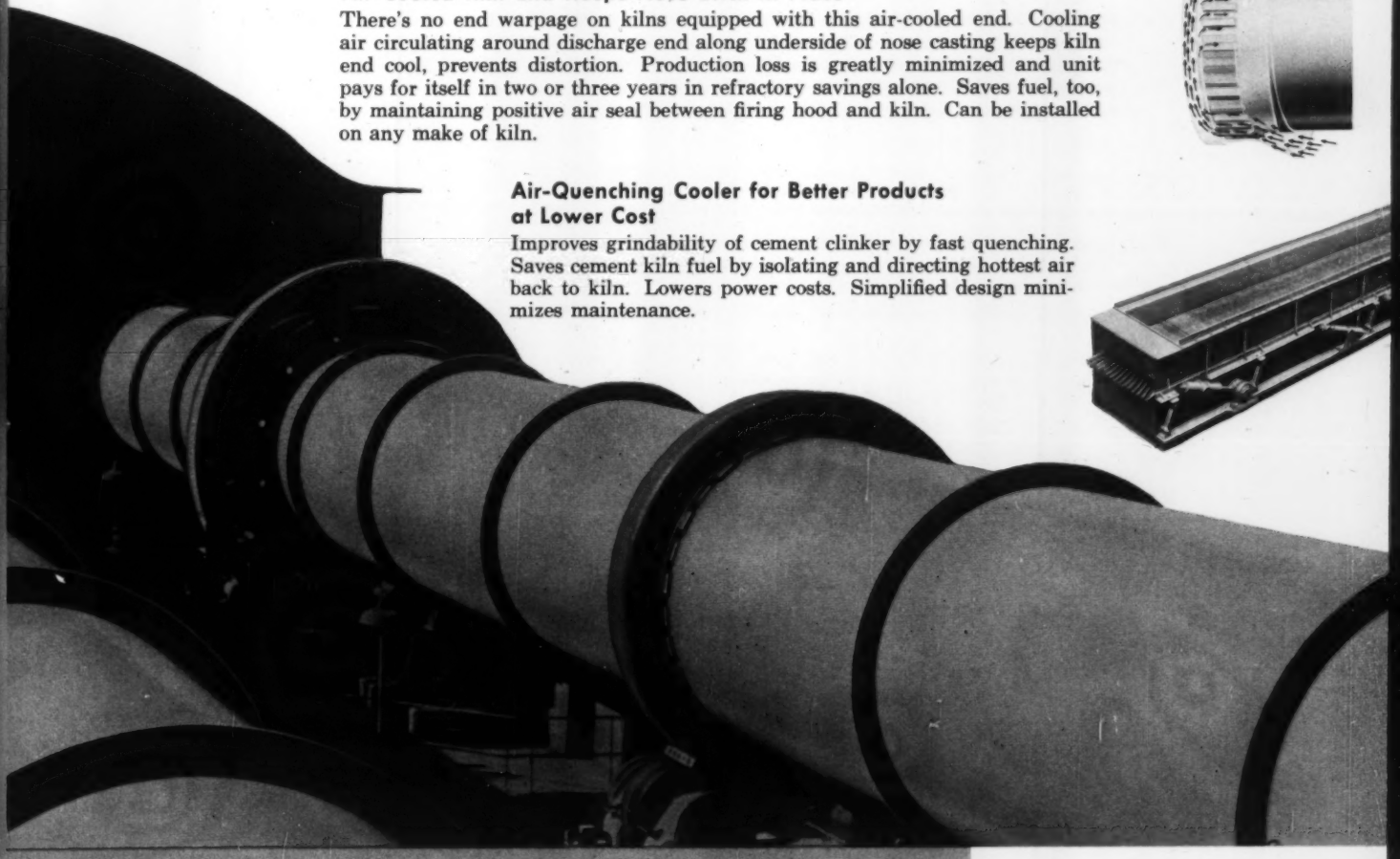


Air-Cooled Kiln End Keeps Nose Brick in Place

There's no end warpage on kilns equipped with this air-cooled end. Cooling air circulating around discharge end along underside of nose casting keeps kiln end cool, prevents distortion. Production loss is greatly minimized and unit pays for itself in two or three years in refractory savings alone. Saves fuel, too, by maintaining positive air seal between firing hood and kiln. Can be installed on any make of kiln.

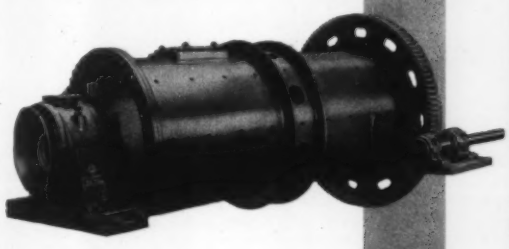
Air-Quenching Cooler for Better Products at Lower Cost

Improves grindability of cement clinker by fast quenching. Saves cement kiln fuel by isolating and directing hottest air back to kiln. Lowers power costs. Simplified design minimizes maintenance.



Grinding Mills for Profitable Production of Specification Sand

Because of stringent specifications, decreasing natural sand reserves and local variations in sand and gravel, operators are "manufacturing" sand in Allis-Chalmers rod mills. These mills are simple to operate. Maintenance is low. Allis-Chalmers also manufactures many other types of mills used wherever finely ground materials are produced, including multi-compartment mills for grinding cement raw materials and clinker.

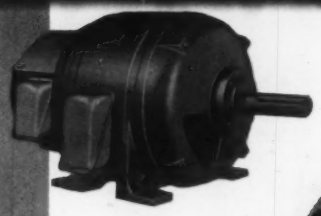


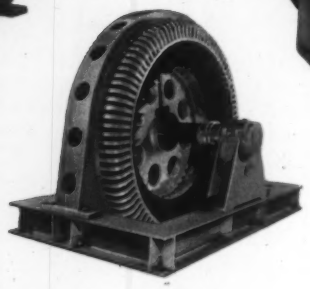
***In addition to processing machinery, Allis-Chalmers supplies the required**

ELECTRICAL EQUIPMENT

. . . machinery and equipment designed to work together, backed by undivided responsibility.

ALLIED ELECTRICAL EQUIPMENT





MOTORS

— Allis-Chalmers builds a complete line of polyphase squirrel-cage and wound-rotor induction motors for every industrial use. These, as well as synchronous and direct current motors, are available with electrical and mechanical modifications to meet a wide variety of applications. Mechanical modifications obtainable include drip-proof, splash-proof and totally-enclosed fan-cooled construction in vertical as well as horizontal types. Many ratings are available with flange-type construction.

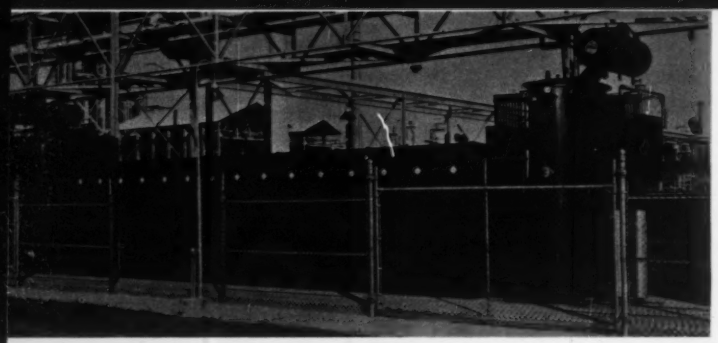
Squirrel-Cage Motors — Most used of all motors is constant speed three-phase cage motor. Construction simplicity makes initial cost and maintenance low.

Wound-Rotor Motors — Used for constant speed duty requiring frequent reversing or starting under heavy load; high starting torque. Also suitable for adjustable-varying speed duty.

Synchronous Motors — Applicable to most constant speed drives. Operating characteristics include high efficiency and the ability to improve system power factor. Widely used for grinding mills, either through magnetic clutches or as direct-connected high torque motors.

Direct Current Motors — Occasionally used for adjustable-speed service, such as for kiln drives.

ALLIS-CHALMERS



UNIT SUBSTATIONS

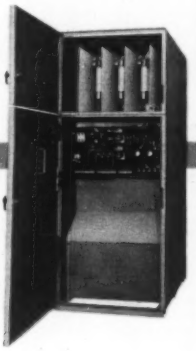
Switchgear is the key to power continuity. In the substation illustrated, double-ended switchgear is combined with duplicate Allis-Chalmers power transformers.

Allis-Chalmers switchgear offers the following advantages:

Saves Space — Compartments have been designed to permit adding special transfer bus or ring bus without adding cubicles.

Saves Cost — Elimination of duplicate facilities or extra cubicles cuts equipment cost.

Saves Time — Dry-type bus joint insulation simplifies adding or removing cubicles. There are no compounds to melt.



CONTROL

Allis-Chalmers can supply motor control for practically every application. Shown is the Type H Control for 2300-5000-volt motors. Starter is provided with air or oil contactor. Meters, relays, fuses, switches — everything needed for the complete protection of man, motor and machine is conveniently installed in an attractive, easy-to-install cubicle.

I would like bulletins on

_____
(Type of equipment)

ALLIS-CHALMERS
Milwaukee 1, Wisconsin

Explanation of process or problem. .....

.....

.....

.....

Name .....

Title ..... Company .....

Address .....

City ..... Zone ..... State .....

A-4644

ground. Shortly, it was decided that the only way to get full and conclusive results was to build ten more models and let the men in the field use them.

This is what happened. Ten tractors, virtual field laboratories, were built by hand, and, as soon as they were ready, they went into the field accompanied by a Cat engineer (ENR June 10, 1954, p. 129). Two additional machines were put back on the proving grounds to check findings and for additional tests.

Results were generally heartening, but by no means were they all words of praise. No contractor had been told how much horsepower was in the tractor—actually drawbar was set at 200. This was done to encourage him to judge the tractor on work performance alone. This he did, but as was expected, he said he wanted still more.

He also said that the brakes on the test models were inadequate and needed boosters. The question was not whether bigger brakes were needed, that was a cinch to take care of and later the drum diameter was increased from 17⅜ in. to 19½ in. But the critical question concerned the fact that the brakes had to absorb so much energy resulting in high temperatures that it was causing the linings to deteriorate. Pressurized air cooling finally was adopted.

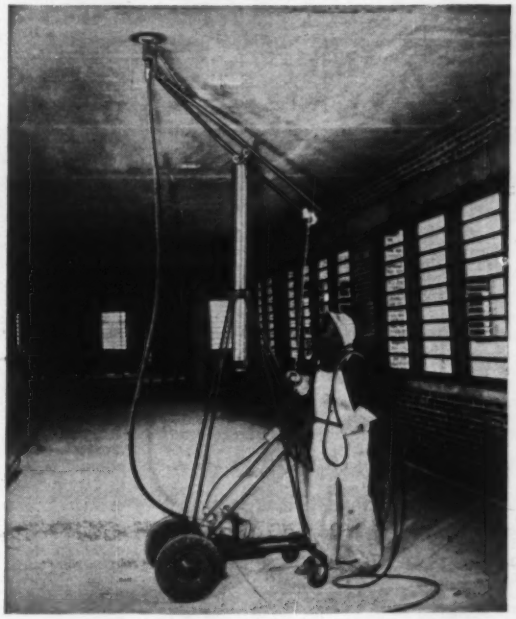
The experimental D9's helped to answer a lot of other questions, too. One machine went out with disc sprocket on one side and a spoke sprocket on the other. The disc sprocket was finally adopted. Three different sizes of track shoes, 24, 27 and 30-in., were tested. The 24-in. became standard on the production model.

A few concessions were made in the D9 final design. Engineering had wanted to use a suspended brake pedal to help clear the deck. But the panel got too heavy and serviceability required that the panel be easily removed to get at that part of the engine.

Weight of the machine was a big concession. But, as one engineer points out, "Weight of the D9 is heavier than almost anybody would like to have it, but tractors are not big simply to be big." Actually, weight per horsepower is comparatively low. The 1935 RD8 had a weight-horsepower ratio of 362 lb per drawbar horsepower; the D8, 265; and the D9 has only 235 lb per dbhp.

By channeling all of the objections and preferences, Cat engineers came up with the D9 as it stands today—a tractor that they hopefully believe will have the broadest possible acceptance.

RUBBING CEILINGS?



Do it *with a* GIRAFFE

- **FASTER AND EASIER: One man will average almost 4000 sq. ft. per day. Does not need scaffolding.**
- **CHEAPER AND BETTER: Money saved on finishing will help pay for grinding.**
- **DEPENDABLE: Individual GIRAFFES have worked more than 1,000,000 square feet without major overhaul.**

CONCRETE GRINDING CORP.
300 STRAIGHT ST. PATERSON, N. J.

"Gunite" ..... the sand-cement product of the "CEMENT GUN," for Concrete and Masonry Repairs, Pre-Stressed Tanks, Steel Encasement and for lining Reservoirs, Sewers and Tunnels.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.
MANUFACTURERS OF THE "CEMENT GUN"

MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents
June Materials, and Labor Prices, will appear in June 9, 1955 issue

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots Gravel, 1½ in.	Gravel, ¾ in.	Sand	CRUSHED STONE Per ton, carload lots 1½ in.	¾ in.	CRUSHED SLAG Per ton, carload lots, f.o.b. plant 1½ in.	¾ in.	CONCRETE BLOCK 8 x 8 x 16-in.; truckload del.: per block Sand grav.	Lt. wgt. agg.	CONCRETE Ready Mixed 1:2:4; over. 50 c.y., del.
	Paper	Bulk	Mortar										
Atlanta	$3.97a	$3.56a	$3.40	$2.75	$2.75	$2.50‡	$2.14	$2.24	$1.45	$1.65	$0.18	$0.195	$12.25g
Baltimore	4.16a	3.75a	3.63	2.60‡a	2.60‡a	2.00‡a	2.75‡a	2.80‡a	2.65‡a	2.60‡a	.18	.18a	12.15
Birmingham	3.72	2.75e	....	2.53n	2.53n	2.08n	2.75	2.75	1.35	1.55	.165	.165	11.00
Boston	4.47b	4.11b	4.06	2.50a	2.50a	2.50a	1.50a	1.60a	.....	.....	.23	.265a	12.50h
Chicago	3.73a	3.32a	3.35	3.25‡b	3.25‡b	3.65‡b	3.50‡b	3.50‡b	2.25‡	2.25‡	.23	.23b	12.00
Cincinnati	3.85c	3.55c	3.63	2.19‡c	2.24‡c	2.24‡c	2.54‡c	2.54‡c	.....	.....	.18	.225a	11.60
Cleveland	N. A. in C. L.	3.34e	....	2.05f	1.85f	1.65	4.10‡a	4.10‡a	3.35‡	3.15‡	.....	.22	15.05
Dallas	3.15a	2.85a	2.93	2.18	2.28	1.84	2.22	2.38	.....	.....	.11i	.267j	9.40
Denver	4.24a	3.94a	4.24	1.85	2.00	1.20	.....	.....	.....	.....	.23	.255a	10.50
Detroit	3.78a	3.20a	3.54	4.50‡b	4.50‡b	4.00‡b	3.75‡	3.75‡	4.25‡	4.25‡	.21	.21a	12.60
Kansas City	4.10b	3.90b	3.90	1.65	1.65	2.00‡a	2.00‡a	2.00‡a	.....	.....	.20a	.24c	12.50k
Los Angeles	4.92ch	4.46ch	5.40	2.31a	2.51a	2.31a	2.16a	2.31a	.....	.....	.135fm	.245m	12.37lh
Minneapolis	4.20a	3.79a	3.71	2.70‡ag	2.70‡ag	1.60‡ag	3.25‡ag	3.25‡ag	.....	.....	.19i	.....	12.75f
Montreal	3.11d	2.86d	....	2.20e	2.20e	2.25e	1.90i	2.20i	.....	.....	.17	.17a	10.80eh
New Orleans	3.50a	3.20a	3.48	2.44	2.44	2.00	....	....	1.45	1.65	.275	.....	12.90
New York	4.26a	3.85a	3.63	2.85bk	2.85bk	1.90bk	2.70bl	2.70bl	.....	.....	.....	.....	14.65an
Philadelphia	3.73/4.12‡a	3.42/3.79‡a	3.58/3.63‡	2.85‡p	2.85‡p	2.35‡p	2.45‡	2.55‡	2.00	2.35	.22/.26	.....	13.20eo
Pittsburgh	3.75a	3.56a	3.75	2.40‡	2.40‡	2.20‡	2.60‡	2.60‡	2.15	2.15	.25d	.31	14.00
St. Louis	3.70/3.93c	3.25/3.51c	3.55/3.72	3.10am	2.90am	2.30/2.90am	1.60j	1.70j	1.50	1.50	.22	.28ci	11.90
San Francisco	3.83c	3.39c	....	2.07	2.07	2.17	2.22	2.22	.....	.....	.....	.28cl	12.15cv
Seattle	4.80a	3.55a	5.95h	3.50‡bm	3.50‡bm	3.50‡bm	4.00‡bm	4.00‡bm	.....	.....	.225f	.315f	12.30fl
Toronto	4.00	3.77	4.00	....	....	1.85	2.00	2.00	.....	.....	.25	.35c	14.95

‡ Delivered. * Prices incl. dealers discount except as noted.

CEMENT: *a* Less 10¢ disc, 15 days. *b* Less 2% disc, 15 days. *c* Less 10¢ disc, 10 days. *d* Truckload lots, deliv. 10¢ disc, 20 days. *e* Truckload lots, destination price. *h* LCL.

SAND GRAVEL, STONE & SLAG: *a* Truck lots. *b* Per cu. yd. *c* 5 tons or more. *e* ½". *f* Pea gravel. *g* Less 5% for cash. *h* Less than 5 tons. *i* Sales tax incl. *j* F.o.b. quarry. *k* Barge lots asd. *l* F.o.b. scow Hudson river. *m* Less 2% for cash. *n* F.o.b. cars. *o* 1–3 mi zone. *p* Add 10¢ for ea. add'l mi zone.

CONCRETE BLOCK: *a* Cinder. *b* Waylite. *c* Haydite. *d* Celocrete *e* 5¼ x 8 x 12 in. *f* 8 x 4 x 16. *g* F.o.b. truck at job *i* Less 2% for cash Less 1% for cash. *l* F.o.b. plant San Rafael. *m* F.o.b. yard

READY MIXED CONCRETE: *a* 5 cu. yds. or over del. Man. *b* 25 cu. yds. or more. *c* 10–100 cy. brackets. *d* 1–3 mi. zone. *e* 2,000 lb comp. *f* 2500 lb. comp. *g* Less 25¢ disc, 15 days. *h* Less 50¢ for cash. *i* 5% off for cash. *j* 2% off for cash. *k* Federal tax included. Add 5% mun. & prov. *l* 1:2½:3. *m* F.o.b. yard. *n* Plus escalator clause. *o* Add 15¢ for ea. add'l 3-mi zone.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for payment within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 40¢ per bbl., not refundable.

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn.	$2.90†	Buffington, Ind.	$2.85†	Steelton, Minn.	$2.95†	Muskegon, Mich.	$3.00†	Toledo, O.	$2.90†
Cilnchfield, Ga.	2.90†	Independence, Kan.	2.80†	Leeds, Ala.	2.75†	Saginaw, Mich.	2.90†	Milwaukee, Wis.	3.05†
Kingsport, Tenn.	2.90†	Hannibal, Mo.	2.85†	Duluth, Minn.	2.95†	Wyandotte, Mich.	2.90†	Green Bay, Wis.	3.05†
West Des Moines, Iowa	2.95†	Northampton, Pa.	2.90†	Hudson, N. Y.	2.75†	Buffalo, N. Y.	3.00†	Ironton, O.	2.90†
Nazareth, Pa.	2.90†	Universal, Pa.	2.95†	Alpena, Mich.	2.80†	Oswego, N. Y.	3.15†	Montreal City	2.56
Bath, Pa.	2.90†	Waco, Tex. (+ 10¢ tax)	2.85†	Detroit, Mich.	2.90†	Cleveland, O.	2.95†	W. Winfield, Pa.	*3.00†

† *Prices to hold for second quarter of* 1955.

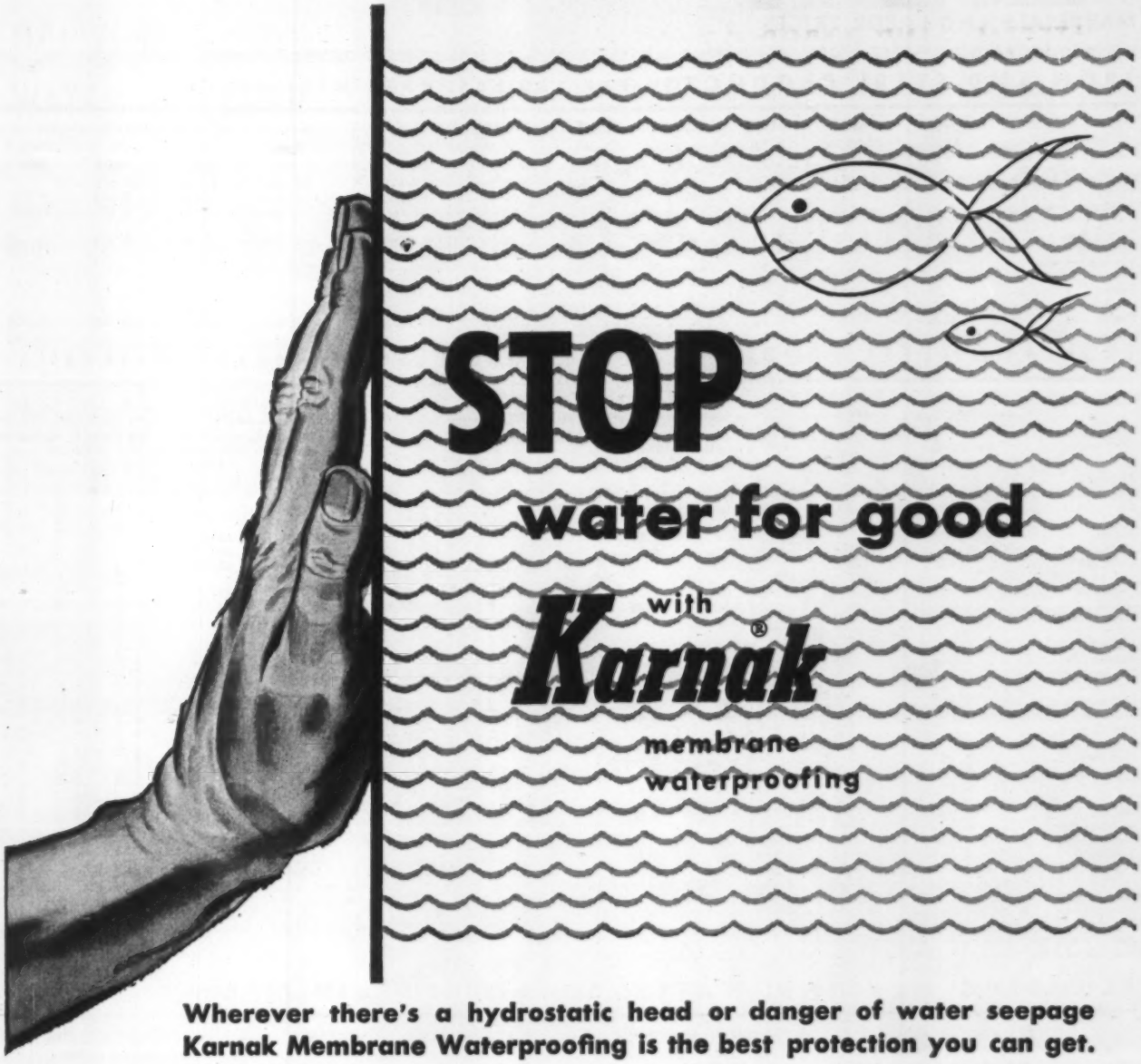
PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	PAVING ASPHALT Per ton, less than 80 penetration Tank car	Drums	ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration Tank car	Drums	CUTBACK ASPHALT MC Per ton Tank car	Drums	ROAD OIL Per gal. Tank car	ASPHALT EMULSION RSI Per gal. Tank car	Drums
Atlanta	.....	.....	.....	$26.00	$33.25	$0.115o	$0.23o	$0.125opw	$0.27opw	$0.15	$0.15	$0.25
Baltimore	150.00‡	75.00‡	.....	21.00i	.....	.085i	0.175i	.09iwu	.18iwu	.09i	.095i	0.185i
Birmingham	.....	57.50i	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	22.00a	23.00a	22.00av	22.00av	.09ov	.....	.10a	.145aq	.22aq
Chicago	155.00‡	85.00‡b	3.50/3.55‡j	19.85b	29.85b	18.85bv	28.85bv	.094bwu	.1740bwu	.0725b	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	200.00	73.00d	5.03g	23.00A	.....	23.00A	.....	.1025Awv	.....	.....	.1025Aq	.18Aq
Dallas	e	40.00	e	24.05	43.09	.1016	.2103	28.91	50.44	.098	.1087	.1960
Denver	.....	50.00‡	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	104.00	.....	27.21	.....	27.21v	.....	.1188wl	.....	.0933	.....	.211
Kansas City	e	e	e	15.00cl	.....	17.50v	.....	.07vwj	.....	.055c	0.11	.....
Los Angeles	e	.....	e	16.00dmx	.....	16.00dxz	.....	18.00dxE	.....	17.00dv	.0825f	.1725f
Minneapolis	.....	.....	2.97h	23.70	.....	23.70	.....	0.10w	.....	0.10	.1025	.....
Montreal	.....	e	e	27.00n	39.60n	.135n	.198n	16.50nuH	20.90nuH	.132n	.197ns	.289ns
New Orleans	.....	.....	.....	17.50e	....o	17.50ew	....o	.085ew	....o	.0825B	.0825BL	.....
New York	.....	.....	2.75f	23.89qCD	44.32qD	22.89wtCD	43.57wtD	.1023wCDF	.1889wDF	.....	.1023CD	.1918D
Philadelphia	175.00	110.00	4.06	22.00	.....	.....	.....	.09uF	.....	.....	.....	.....
Pittsburgh	165.00	48.00	4.60	27.00	38.00	.10	.21	27.00H	40.00H	.098	.11	.224
St. Louis	.....	.....	.....	18.55f	.....	.1713	.....	.0865wM	.....	0.155	.10	.....
San Francisco	.....	67.50e	.....	17.50g	33.00gp	17.50gkv	33.00gkv	20.00gN	37.50gN	18.75w	.085y	.....
Seattle	.....	.....	.....	17.50h	38.00h	17.25hv	.....	24.50K	.....	19.75hv	.085h	.095hr
Toronto	.....	.....	4.03	23.80	46.67	0.19	0.24	0.20w	0.24w	0.17	0.20	.24

‡ Delivered.

PAVING BRICK & BLOCK: *a* CL. *b* 3 x 4 x 8. *c* 2¼ x 8¼ x 4. *d* LCL, truck deliveries. *e* Not used. *f* 2" interior 6# treat. *g* 3" *h* 2" tr; 8# 3# treat. *i* 3 x 3½ x 8½. *j* 2½", 6lb. tr.

ASPHALTS: *a* Price at plant, Everett, Mass. *b* F.o.b. refinery Lockport, Ill. *c* F.o.b. Sugar Creek, Mo. *d* F.o.b. refinery, El Segunda. *e* F.o.b. Baton Rouge. *f* F.o.b. Wood River or Roxana, Ill. *g* F.o.b. Richmond, Calif. *h* F.o.b. Martines. *i* F.o.b. refinery, Baltimore. *j* F.o.b. refinery, Inglewood, Calif. *k* 50–110 penetr. *l* Less than 100 penetr. *m* 40/80 penetr. *n* Tax incl. *o* Drums not avail. Shipped in steel bbl. *q* 40/85 penetr. *r* In customer's drums. *s* Shipped in drums, per drum. *t* 85/200 penetr. *u* Per 100 gal. *v* Per ton. *w* Per gal. *x* Also tank trucks *y* F.o.b. Oakland. *A* F.o.b. refinery, Cleveland. *B* F.o.b. Destrehan, La. *C* Bulk. *D* Prices based on transporting to Manhattan via truck. *E* RC. *F* Also RC. *G* Also MS, SS. *H* RC 0-5 incl. *I* MC 4. *J* MC, RC .0675. *K* MC 3, 4 & 5. *L* MS. *M* MC 1-5, RC 1-5, .089. *N* MC 3. *O* Eff. 1/1/54. *P* Fob refinery Savannah: $0.09/gal., tank cars; $0.20/gal., drums.



Wherever there's a hydrostatic head or danger of water seepage Karnak Membrane Waterproofing is the best protection you can get.

Karnak membrane fabric is saturated so that it is non-sticking and unrolls easily... to the very end. There is no waste. It "works" faster, lays on wrinkle-free...saves labor cost on the job.

Open mesh, long-fiber-cotton cloth, saturated with specially prepared asphalt so as to leave the mesh open, is layered on the job with alternate moppings of highly refined, ductile asphalt. The open mesh allows the mopping asphalt to penetrate and interlock the layers. This provides a firm, mechanical bond that resists abrasions, settling and cracking thus maintaining water resistance through the life of the structure.

The layering of fabric and asphalt is the only method of waterproofing that insures proper thickness of asphalt throughout the application. For normal application with hydrostatic head up to 15 feet, two plies of fabric are sufficient; hydrostatic head of 15 to 20 feet takes three plies; four plies are sufficient to waterproof any class of work regardless of hydrostatic head.

Whatever *your* waterproofing problem, Karnak will prove best. Bridges, buildings, tunnels, retaining walls, viaducts, swimming pools, all need and use Karnak. The Merchandising Mart, Chicago, Ill., used Karnak over twenty-five years ago... the Fairless Works of U.S. Steel used it last year. Specify Karnak on your next waterproofing job.

see our catalog in Sweet's or write for copy

Karnak®

manufactured by

Lewis Asphalt Engineering Corp., 30 Church St., New York 7, N.Y.

Dept. 212

Asphalt Roof Coatings and Cements • Caulking Compounds • Asphalt Emulsions • Tile Cement
Asphalt Paint • Wood Block Mastic • Joint Filler • Aluminum Asphalt Roof Coating

© L. A. E. Corp.

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES— CARBON STEEL	PLATE CARBON STEEL	REINF BARS billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	STEEL RAILS Per Net Ton Light	TRACK SUPPLIES Angle Bars	TRACK SUPPLIES Std Spikes	TRACK SUPPLIES Tie Plates	TRACK SUPPLIES Track Bolts
Birmingham Area	$4.25	$4.225	$4.30	$9.25	....	$89.00	$107.00	$5.425	$7.30	$5.275	....
Chicago Area	4.25	4.225	4.30	9.25	$5.075	89.00	107.00	5.425	7.30	5.275	....
Pittsburgh Area	4.25	4.225	4.30	9.25	5.075	89.00	107.00	5.425	7.30	5.275	$11.50
Buffalo Area	4.25	4.225	4.30	9.25	5.075	89.00	107.00	5.425	7.30	5.275	11.50
Cleveland	....	....	4.30	9.25	5.075	.....	.....	....	....	....	11.50
Youngstown Area	....	....	4.30	....	....	.....	.....	....	7.30	....	....
Geneva	4.25	4.225	....	....	....	.....	.....	....	....	....	....
Los Angeles	....	....	....	....	5.075	.....	.....	....	7.30	....	....
Pueblo	4.30	4.70	4.75	....	....	.....	95.00	5.425	7.30	5.275	11.50

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS Per 100 lb., base price 5 tons to carload lot New billet	REINFORCING BARS Rail steel	EXPANDED METAL LATH‡ Per 100 sq. yd., carload lots Std. diamond mesh, 3.4 lb.	EXPANDED METAL LATH‡ Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING Per 100 sq. ft., carload lots fob mill
Atlanta	$7.08	$7.22	$7.22	$38.00‡	$42.00‡	
Baltimore	7.02	7.06j	....	42.00	45.00	
Birmingham	6.65	6.50t	6.50t	51.00»	57.00»	
Boston	7.49s	7.37	7.37	42.00	46.00	
Chicago	6.69	5.78qu	5.78qu	46.00‡	56.00‡	
Cincinnati	7.06ak	7.06rv	....	39.00»»	43.00»»	
Cleveland	7.02	5.76c	....	39.00‡	43.00‡	
Dallas	9.05	7.25	7.25	49.00	52.00	
Denver	8.15	7.20c	....	48.00»	63.00»»	
Detroit	7.16	6.15»	....	50.50	60.50	
Kansas City	7.36a	7.18	....	43.50	47.50	
Los Angeles	7.55fd	7.05	....	52.00	58.00	
Minneapolis	7.05d	7.68b	7.68b	37.00	41.00	
Montreal	7.50–8.00i°/8.50–9.20‡	6.65i	6.65i	46.00‡	51.00‡	
New Orleans	....	6.20akz	....	66.00	60.00	
New York	7.48	6.85yaa	6.85yaa	42.00»»	48.00»»	
Philadelphia	6.42	6.67	....	38.00‡	42.00‡	
Pittsburgh	6.69	6.92z	6.55	37.60	39.60	
St. Louis	7.09»	6.30c	6.30c	55.00‡	56.00‡	
San Francisco	7.50	6.85f	....	41.50	47.50	
Seattle	5.00e	6.55cj	....	51.00»»	57.00»»	
Toronto	8.00*	6.55	6.55	53.50n	66.50n	

Quantity extras, per cwt: under 100♯, +$6; 100–399♯, +$3; 400–999♯, +1.25; 1000–1999♯, +30¢; 2000–4999♯, base price; 5000–9999♯, −10¢; 10,000–19,999♯, −30¢; 20,000–29,999♯, −50¢; 30,000♯ and up, −70¢

EXTRAS, per cwt—*Quantity: less than 700♯, +50¢; 700–1499♯, +25¢; 1500–7999♯, +10¢ *Size†: #2 +$2.20; #3, +$1.10; #4, +80¢; #5 +62.5¢; #6, #7 +45¢; #8, #9, #10 +30¢ *Bending: heavy, +80¢; light, +$2 (except in New York City and surrounding metropolitan area where bending must be done on the job) *Engineering (details and placing from designs by others): over 500 tons, +45¢; 200–500 tons, +50¢ but not over $4500; 20–200 tons, +60¢ but not over $2000; 5–20 tons, +70¢ but not over $240; under 5 tons, +85¢ but not over $70 *Design only: +60¢

‡ Delivered *a 2000–9999♯ *b 10,000–15,999♯, fob city *c 20 tons or over *d 10,000–19,999♯ *e fob plant *f incl. delivering in free zone *g CL *h list price; dominion tax exempt; add provincial and municipal taxes *i add dominion, provincial and municipal sales taxes *j intermediate and hard grade *k fob city *l delivered; contractor to do unloading *m copper alloy *n LCL *o asphalt coated *p del. of 500 sq. yd. or more *q 4♯ per sq. yd. *r 2% off for cash *s 2,000–4,999♯ *t add 15¢ del. *u add 6.25¢ switch *v incl 15¢ del. *x add 5¢ switch *y add 30¢ del. *z add 10¢ del. *aa Prices beginning Aug. 1 based on Morrisville, Pa.; previously based on Sparrow Pt., Md. Decrease in freight costs due to switch in mill base offset mill price rise in July '54. *A American made. *C Canadian made. † Number system replaces inch system of classifying bar sizes. New system is based on number of eighth inches in diameter of bar. *• Aver. of Canadian & American.

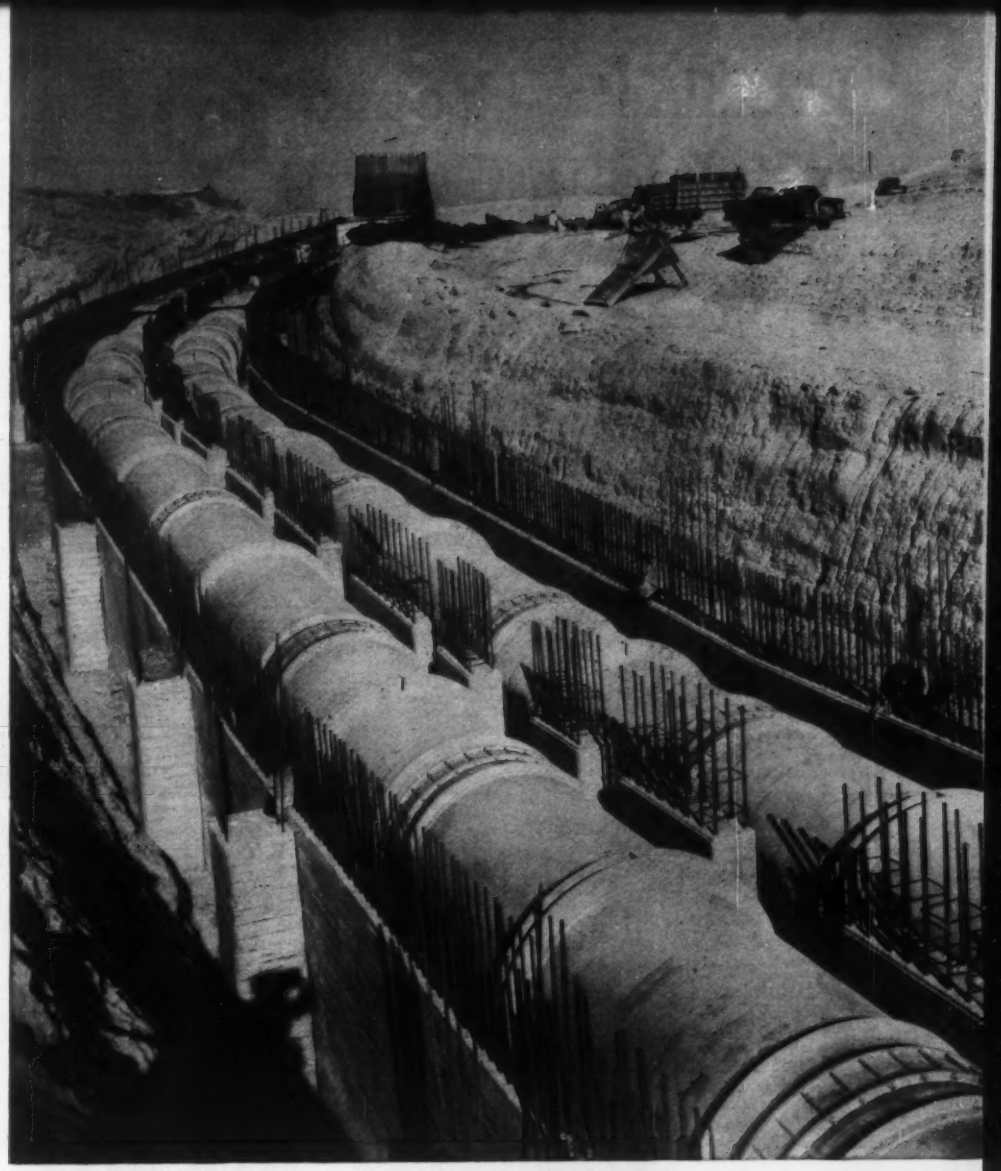
PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

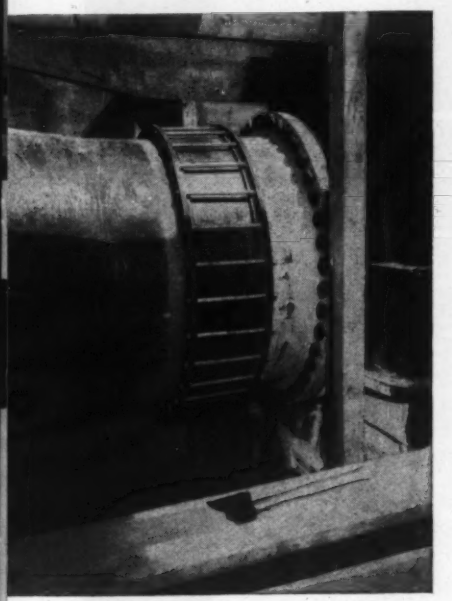
	C. I. PIPE Per net ton f.o.b. 6 in. to 24 in.a	ASBESTOS CEMENT PIPE per lin. ft. f.o.b. city 6" Pr Cl. 150	ASBESTOS CEMENT PIPE 12" Sew Cl. 1	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T std. 8 in. s.s.	std. 12 in. s.s.	24 in. ds.	36 in. ds.	CLAY DRAIN TILE ASTM C4-24 Per 1,000 ft., carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTMC 14-41 12 in.	24 in.
Atlanta	$101.00	$1.45	$2.42	$ .545	$1.27	$4.82	$12.925	.....	.....	$0.90m	$3.40m
Baltimore	121.50	1.45	2.42	.546	1.053	4.275e	11.3775	$178.20	$274.80	.99	2.70
Birmingham	108.00	1.45	2.42	.42	.75	3.30r	10.50r	260.00‡	400.00‡	1.25m	2.75m
Boston	122.00	1.47	2.20	.609grt	1.745grt	4.815grt	12.505grt	187.80r	289.20r	1.54mg	3.65mg
Chicago	107.00	1.45	2.20	.77m	1.48m	6.25m	19.00m	150.00‡	270.00‡	.80	2.80
Cincinnati	108.00	1.47	2.29	.609t	1.1745t	4.82t	12.61t	225.00	350.00	.80m	2.95m
Cleveland	108.00	1.47	2.29	.518s	.999s	4.14s	13.12	158.00m	245.65m	.85x	3.25m
Dallas	112.00	1.47	2.54	.439	.799	4.00b	9.17b	.....	.....	.49	1.60
Denver	115.00	1.88	2.54	.45n	.78n	3.48n	....	.....	.....	.74m	2.50m
Detroit	108.00	1.47	2.29	.80	1.50	5.95	16.40	212.00m	328.00m	.95	3.82
Kansas City	113.00	1.47	2.29	.56	.995	4.13	11.20	250.00	480.00	.80	3.25g
Los Angeles	129.65x	1.53	2.20	.671	1.461	5.971	14.891	228.20l	348.90l	.95	2.75f
Minneapolis	112.00	1.49	2.42	.76mo	1.38mo	5.70mo	....	.....	.....	1.38h	4.05h
Montreal	110.00	....	....	1.07u	1.73u	5.52u	8.93u	.....	.....	1.17h	3.11j
New Orleans	101.50	1.45	2.42	.483	.875	4.69	....	280.00p	460.00p	.65	2.29
New York	111.35	1.47	2.20	.68	1.30	5.12	13.50	.....	.....	1.15	3.00
Philadelphia	110.00	1.45	2.20	.65	1.25	4.95v	12.65v	300.00‡	350.00‡	1.60h	3.95h
Pittsburgh	110.00	1.47	2.20	.468m	.864m	3.86m	9.78m	152.00	244.00	1.05h	2.50h
St. Louis	112.00	1.45	2.29	.56	1.03	4.22	9.80	180.00l	380.00l	1.20il	2.70il
San Francisco	127.00	1.53	2.20	.74d	1.62d	6.59d	16.47d	235.00l	392.00l	1.05»	3.30n
Seattle	138:73	1.54	2.20	.51b	.91b	....	....	150.00c	.....	.85k	2.75k
Toronto	....	....	....	.76	1.425	5.70	....	157.00	280.00	.87	3.05

| | *WROUGHT STEEL PIPE (Full standard weight) Discount from list; see footnote | | |

DELIVERING WATER CHEAPER

Engineered by the Metropolitan Water District of Los Angeles, this twin 73″ Dresser-Coupled steel pipe line was installed as an outlet for Garvey Reservoir near Monterey Park, California. It was laid on the surface by the ABC Construction Co., then covered by a concrete tunnel with no access for future maintenance, repair.





Everlasting Pipe Line

LOS ANGELES COVERS DRESSER-COUPLED STEEL LINE FOR GOOD

Both the engineers and contractor on this job put fullest confidence in the ability of steel pipe joined with Dresser Couplings to deliver water indefinitely . . . *without maintenance or repair!*

And well they might, for steel pipe—with glass-smooth inner surfaces—will maintain high carrying capacity indefinitely. Protected by rugged coatings, it is impervious to corrosion and incrustation. And Dresser Couplings, because they are precision-made, factory-tested and foolproof to install, give assurance of 100% perfectly tight joints. The specially compounded, almost indestructible rubber gaskets in Dresser Couplings will remain bottle-tight for the life of the line.

The result—a lower cost, maintenance-free, virtually everlasting pipe line that will *deliver water cheaper.*

√ *Wherever water flows—steel pipes it best!* Always put steel pipe and Dresser Couplings in your specifications.

DRESSER®

75th ANNIVERSARY · THE DRESSER WAY · 1880 · 1955

Dresser Manufacturing Division, 69 Fisher Ave., Bradford, Pa. (One of the Dresser Industries). Warehouses: 1121 Rothwell St., Houston; 101 S. Airport Blvd., S. San Francisco. Sales offices also in: New York, Philadelphia, Chicago, Toronto.

In Atlanta -- Youngstown Buckeye Conduit installed in Georgia State Office Buildings

WHY YOUNGSTOWN BUCKEYE CONDUIT IS BETTER

Youngstown is the one manufacturer who makes rigid steel conduit from ore to finished product. This enables Youngstown to control the complete manufacturing process—your insurance that each length of "Buckeye" is made of top-grade steel.

Mechanical Contractors & Engineers, Inc., Electrical Contractor
Electrical Wholesalers, Inc., Electrical Distributors

Youngstown

BUCKEYE QUALITY YOUNGSTOWN SERVICE **CONDUIT**

●Planned and built for years to come, these modern Georgia State Office Buildings have wiring protected by Youngstown Buckeye rigid steel conduit. It was only natural that Buckeye was specified. Made of top-grade steel, Buckeye dependably guards any electrical system against such damaging elements as water, moisture, vapor, dust and dirt. Its durability makes Buckeye rigid steel conduit ideal for wiring systems that must be permanently **safe.**

THE YOUNGSTOWN SHEET AND TUBE COMPANY *Manufacturers of Carbon, Alloy and Yoloy Steel*

General Offices: Youngstown, Ohio - District Sales Offices in Principal Cities

SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT - MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - BAR SHAPES - WIRE - HOT ROLLED RODS - COKE TIN PLATE - ELECTROLYTIC TIN PLATE - RAILROAD TRACK SPIKES

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F.O.B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR

All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)
All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1. Lengths up to 20 ft.
(Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh	LONG LEAF Y. P. Merchantable grade up to 20 ft. 2x12 Rgh	12x12 Rgh	PLYWOOD Rail freight increment (See note for base price) ⅜"	¾"
Atlanta††	$77.00	$79.00	$72.50	$73.00	$76.50	$80.00	$78.00	.....	.....			$22.32	$27.24
Baltimore*	87.00	92.00	85.00	85.00	90.00	98.00	105.00	.....	.....	$165.00	$180.00	25.92	31.60
	120.00g	*120.00g*	*120.00g*	*122.00g*	*122.00g*	*122.00g*	*130.00g*	*$140.00*	*$140.00*			.....	.....
Birmingham††	83.50	85.50	80.50	87.50	90.50	95.50	105.50	.....	.....	120.50	165.50	21.78	26.58
	105.00	*105.00*	*108.50*	*108.50*	*108.50*	*105.00*	*105.00*	*100.00*	*109.00*	.....	.....	.....	.....
Boston*	97/105a	104/114a	98/100a	98/100a	98/100a	98/100a	.....	.....	.....	.....	.....	25.92	31.60
	89.00n	*89.00n*	*118/120*	*118/120*	*118/120*	*118/120*	*118.00*	*119.00*	*119.00*	.....	.....	.....	.....
Chicago**	99/100	102/103	95/96	110.00	118.00	119/120	114/115	.....	.....	142.00	142.00	22.45	27.37
	105.00	*105.00*	*116/117*	*117/118*	*117/118*	*118/119*	*125.00*	*125.00*	*125.00*	.....	.....	.....	.....
Cincinnati*	93.75	94.75	83.00	90.50	94.75	103.00	110.50	.....	.....	131.75	131.75	25.00	30.48
	98.75	*101.00*	*111.00*	*107.00*	*108.00*	*109.00*	*134.00*	*134.00*	*134.00*	.....	.....	.....	.....
Cleveland**	98.00	100.00	103.00	108.00	108.00	109.00	.....	.....	.....	.....	.....	25.37	30.93
	.....	.....	*118.00*	*115.00*	*115.00*	*115.00*	*126.00*	*126.00*	*126.00*	.....	.....	.....	.....
Dallas††	72.00	78.00	68.50	68.50	73.50	65.50	136.50	.....	.....	127.50	134.50	18.72	22.80
Denver*	*Not in stock*		*119.75*	*121.50*	*121.50*	*122.50*	*125.00*	*137.75*	*140.50*	.....	.....	13.92	16.98
Detroit‡	112.00	116.00	105.00	112.00	118.00	118.00	.....	.....	.....	.....	.....	25.00	30.48
	125.00	*125.00*	*130.00*	*130.00*	*130.00*	*130.00*	*160.00*	*160.00*	*160.00*	.....	.....	.....	.....
Kansas City*	120.00	120.00	115.00	120.00	125.00	135.00	.....	.....	.....	.....	.....	16.56	20.16
	125.00	*125.00*	*120.00*	*129.00*	*129.00*	*130.00*	*150.00*	*170.00*	*195.00*	.....	.....	.....	.....
Los Angeles†	*97.00*	*97.00*	*97.00*	*97.00*	*97.00*	*97.00*	*128.00*	*138.00*	*128.00*	.....	.....	16.61ab	20.25ab
Minneapolis#	*145.00*	*145.00*	*145.00*	*145.00*	*145.00*	*145.00*	*165.00*	*165.00*	*165.00*	.....	.....	19.89	24.25
Montreal*ab*	92.00	100.00	92.00	92.00	110.00	125.00	.....	.....	.....	105.00	99.50	.....	.....
	175.00	*175.00*	*175.00*	*175.00*	*175.00*	*175.00*	*130.00*	*130.00*	*126.00*	.....	.....	.....	.....
New Orleans††	100.00	100.00	92.50	85.00	90.00	94.00	118.50	.....	.....	180.00	148.00	18.72	22.80
††	*113.50*	*113.50*	*117.00*	*123.50*	*123.50*	*123.50*	*122.00*	*129.00*	*129.00*	.....	.....	.....	.....
New York‡	112.50	115.50	122.50	125.00	125.00	125.00	165.00	.....	.....	240/260	240/260	25.92	31.60
	.....	.....	*125.00*	*125.00*	*125.00*	*125.00*	*160/170*	*165/175*	*165/175*	.....	.....	.....	.....
Philadelphia‡		Range from $115.00 to $135.00				115/135	115/135	.....	.....	210/220	210/220	25.92	31.60
		Range from $128.00 to $165.00				*128/165*	*133/155*	*155.00*	*155.00*	.....	.....	.....	.....
Pittsburgh††		Range from $105.00 to $107.00					120.00	.....	.....	120.00	130.00	25.92	31.60
	135.00	*135.00*	*135.00*	*135.00*	*135.00*	*135.00*	*125.00*	*145.00*	*145.00*	.....	.....	.....	.....
St. Louis‡	112/117	114/120	119/124d	127/128d	134/136e	142/144e	.....	.....	.....	.....	.....	18.72	22.80
	.....	.....	*126/132i*	*128/130e*	*128/132e*	*131/134e*	*193.00e*	*193.00*	*193.00*	.....	.....	.....	.....
San Francisco..A†	*87.00*	*76.00*	*86.00*	*86.00*	*86.00*	*86.00*	*103.00*	*116.00*	*141.00*	.....	.....	12.22	14.91a
Seattle††	*76.00*	*76.00*	*76.00*	*76.00*	*76.00*	*76.00*	*82.00*	*87.50*	*87.50*	.....	.....	.....	.....
Toronto*a*	105.00	105.00	105.00	105.00	105.00	105.00	115.00	.....	.....	110.00	135.00	.....	.....
	115.00	*118.00*	*125.00*	*125.00*	*125.00*	*130.00*	*126.00*	*140.00*	*140.00*	.....	.....	.....	.....

† F.o.b. mill. * F.o.b. city, CL out of yard. ** F.o.b. city, CL direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. 3. asd.

LUMBER: **Bold Face type· Southern Pine.** *Italics, Douglas Fir.* *a* Spruce *b* Tax exempt. *c* 5M lots. *d* 8, 10, & 12 ft. lengths. *e* 8 to 16 ft. lengths. *g* No. 1 common. *i* 8 ft. lengths. *k* No. 3 common. *n* #3. A Rail freight rate from North west mills to San Francisco are $11.50 to $15.00 per M ft. bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock. For rough, add $3.00 to above figures.

PLYWOOD: Interior Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ⅜", $170.00; on ¾", $191.00. Exterior ⅜", $190.00, ¾", $212.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. *a* Lower rate by water shipment. *b* 50,000 lb. minimum.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS Discounts from jobbers list, Feb. 1, 1956a Single or Double Thickness A quality	B quality	EXPLOSIVES Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*	
Atlanta	79%	80%	$0.2365	
Baltimore	78%d	80%d	.2365	
Birmingham	82%	83%	.1840	
Boston	77-10%	77-10%	.2365	
Chicago	76%	76%	.2365	
Cincinnati	76%	76%	.2365	
Cleveland	76-10-10%	76-10-10%	.2765	
Dallas	75%	75%	.2440	
Denver	79%	79%	.2415	
Detroit	76-10-10%	76-10-10%	.2365	
Kansas City	80-10%	80-10%	.2415	
Los Angeles	73%	73%	.2890	
Minneapolis	75-10%	75-10%	.2415	
Montreal	40-5%bc	40-10-5%b	21.35h	
New Orleans	78%	79%	.2415	
New York	80-10%	80-10%	.3975g	Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40% in U.S.; $1.75 per 100 lbs. higher in Canada.
Philadelphia	77%	79%	.2365	
Pittsburgh	80%	80%	.2090	
St. Louis	80-10%	80-10%	.2415	
San Francisco	63%e	70%	.2365	
Seattle	73%	76%	.2390	

Glass; a Jobbers' list price per box, 14 x 20, as, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b* Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. *c* Single thickness. *d* Discount 6/15/52. * Discount eff. 12/31/54.

Explosives; * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g* In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. *h* F.o.b. Beloeil (near Montreal), per 100 lb. forcite, 40%. Forcite 60%, $23.10.

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.184	$0.2165	$0.2365
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.189 - .1965	.2215-.229	.2415-.249
Rocky Mtn. States	.189 - .2015	.2215-.229	.2415-.254
Pacific N. W. States	.1865-.199	.219 - 2315	.239 - .2515
Pacific S. W. States	.184 - .1915	.2165-.219	.2365-.2415

PILES, TIES F.O.B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail Pine*	Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	....
12-in.— 2-ft. from butt	6-in.	50 to 59-ft.	.54	....
12-in.— 2-ft. from butt	6-in.	60 to 69-ft.	.58	....
12-in.— 2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in.— 3-ft. from butt	5-in.	91 to 100-ft.	....	....
14-in.— 2-ft. from butt	6-in.	50 to 69-ft.	.50/.68	....
14-in.— 2-ft. from butt	6-in.	70 to 79-ft.	.78/.83	.93
14-in.— 2-ft. from butt	5-in.	80 to 85-ft.	.83/.93	.94
14-in.— 2-ft. from butt	5-in.	85 to 89-ft.	....	1.00
14-in.— 2-ft. from butt	5-in.	90 to 100-ft.	....	1.03

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots:

		8'x8'x8' Untr.	8'x8'x8' Tr.		7'x9'x8'8" Untr.	7'x9'x8'8" Tr.
Birmingham	Hardwood, Grade 3	$1.95a	$4.00a	Gv. 5	$2.55	$4.90a
	Grade 2	1.75	3.80a	" 4	2.40	4.70a
	Grade 1	1.45	3.40a	" 3a	2.10	4.50a
Chicago	Red Oak	.....	3.20a		.....	4.10/4.20a
New York	S. L. Sap Pine	2.00	4.00		3.00	5.00
	Mixed Oak	2.50	4.50		3.50	5.50
Philadelphia	Red Oak	2.55	3.90		3.45	5.10
St. Louis	White Oak	2.20	.....		2.50	.....
	Red Oak	2.10	2.65a		2.35	3.05a
	Sap Pine or Cypress	.....	2.55a		.....	2.90a
San Francisco	Douglas Fir	2.08ef	3.08ef		2.73bf	3.93caf

Tr.—Treated; Untr.—Untreated. *a* Creosoted. *b* 7'x9'x8'. *c* Empty cell. *e* Green *f* f.o.b. cars.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb::	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works::	.095
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, f.o.b. works, ton	27.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb	2.30
Soda ash, 58%, in paper bags, per 100 lb. dense::	1.70
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.85
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works:::	10.35

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE — PARTITION — SCORED, Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE — LOAD BEARING — SCORED, Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK — Per M. in quantity, Common backing	Straight hard	LIME — Per ton, in paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized, or lump
Atlanta	$124.65	$124.65	$249.30	$280.45	.....	.....	$24.50	$26.50	.....	.....	.....
Baltimore	194.00	207.00	388.00	440.00	572.00	654.00	36.00*k*	41.00*k*	32.00	21.50	.....
Birmingham	126.00*p*	142.00*p*	253.00*s*	284.00*p*	354.00	438.00	25/26*ff*	30/31*gg*	29.25	24.00	.....
Boston	196.00*t*	209.00*t*	392.00*t*	283.25*t*	.....	.....	36.85*p*	39.85*p*	30.00*t*	28.00*t*	.....
Chicago	135.00	145.00	280.00	.....	.....	.....	26.00	28.00	31.00	27.00	.....
Cincinnati	205.00*f*	215.00*f*	295.00*fdd*	.....	.....	.....	45.00*f*	46.00*f*	27.50*f*	27.50*f*	.....
Cleveland	170.00**	181.00**	.....	.....	.....	.....	36.50	36.50	28.75	23.75	33.50*ee*
Dallas	.....	118.00	.....	.....	.....	.....	19.75	32.25*r*	32.00	21.80	.....
Denver	.....	.....	.....	.....	.....	.....	34.00	41.00	34.80*bb*	28.00*bb*	34.00*bb*
Detroit	130.00	138.00	259.00	.....	315.00	360.00	37.50*cc*	38.50*cc*	34.00	30.00	.....
Kansas City	127.50	147.50	270.00	270.00	340.00	400.00	29.25	29.25	32.00	27.50	28.50
Los Angeles	*r*	*r*	*r*	*r*	*r*	*r*	27.50§	.....	34.00	34.00	35.00
Minneapolis	179.00*p*	199.00*p*	410.00*p*	199.00*pw*	.....	.....	40.00*xp*	45.00	40.00*bbe*	30.00*bbe*	42.00*bbde*
Montreal	165.00*aq*	181.00*au*	325.00*au*	230.00	248.00*	.....	39.50	46.00	34.80	22.00	13.75*u*
New Orleans	170.00	170.00	310.00	380.00	.....	.....	31.00	.....	.....	28.00	28.00
New York	151.90*h*	162.00*h*	222.70*eh*	245.40*hn*	.....	.....	41.00	.....	36.00	34.00	.....
Philadelphia	156.30	166.80	312.70	375.20	.....	.....	30/34	34/40	27.60	25.60	3.17
Pittsburgh	138.00	151.00	260.00	228.00	297.00	341.00	36.00	46.00*g*	25.00	23.00	2.97*m*
St. Louis	147.00*ee*	168.50*ee*	338.25*ee*	465.00*ee*	439.00	621.50	41.50*el*	43.00*s*	.90*aaa*	.75*aaa*	1.10*aaspec*
San Francisco	156.85*o*	177.10*o*	235.30*ddo*	.....	.....	.....	39.50	.....	26.60	26.60	2.65*m*
Seattle	223.00*ee*	250.00*ee*	320.00	240.00*eew*	.....	.....	39.00*s*	49.00*s*	42.00*ahh*	37.50	3.90*mhh*[1]
Toronto	138.70	148.90	273.75	222.00*f*	.....	.....	41.50	59.00	40.00	33.50	29.00

† F.o.b. yard Roxbury. *a* Smooth. *b* Per 50 lb. bags. *c* 6 x 12 x 12 in.-3 cell. *d* Pulverized hot. *e* 5%, 10th following month. *f* 8x8x12 *g* 5½ x 8 x 12. *h* F.o.b. trucks, job site N.Y.C. *j* Truck load or over. *k* $1.00 discount *l* Red face. *m* Per bbl., 180 lb. *n* 7½ x 7½ x 12. Speed title. *p* Truck lots. *q* Provincial and Municipal tax extra. *r* Not used because of earthquake danger. *s* 2% discount for cash. *t* 5½ x 8 x 11¼. *u* Tax exempt. *v* Sand lime. *w* 5 x 8 x 12. *y* Stacked. *z* Pebble lime price per 80 lb. sack. *aa* Price per sack. *ab* Lime not sold per ton. *bb* LCL. *cc* Truck delivery. *dd* 6 x 12 x 12. *ee* Pebble lime. *ff* 80% common. *gg* Select. *hh* LCL: *§* F.o.b. yard: ** Warehouse delivery. * F.o.b. Stockton:

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD, Per 100 lb. in 600-lb. (Approx.) bbl. Dry *a*	WHITE LEAD, Per 100 lb. in 100 lb. cases In oil *w*	READY-MIXED PAINT — Per gal., drums, Graphite *b*	Aluminum *c*	Ferric Oxide *d*	ROOFING SUPPLIES: Carload lots f.o.b. factory — Rolls, slate surfaced, 55-90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 300 lb. bbl. per ton
Atlanta	$17.75	$28.275	$3.26	$3.51	$3.01	$2.95	$2.45	$2.45	$0.60	$55.00
Baltimore	17.50	27.90	2.75	4.25	3.35	2.42	3.73	3.73	.44	48.32
Birmingham	17.75	28.275	3.90	3.40	....	2.42	2.04	2.04	.79*ff*	36.00*ee*
Boston	17.50	27.90	....	....	....	2.84*aa*	2.66*aa*	2.66*aa*	.42*g*	50.50*g*
Chicago	17.50	27.90	....	....	....	2.64*tu*	2.61*to*	2.61*to*	40.00*tbbr*	50.00*t*
Cincinnati	17.50	27.90	....	....	....	2.49	2.31	2.31	.46*y*	49.36
Cleveland	17.50	27.90	2.30*pgg*	2.45*gg*	2.49*gg*	2.42*q*	2.24*o*	2.24*o*	.38*y*	42.70*hh*
Dallas	17.75	28.65	....	4.05	....	3.50*q*	3.75*o*	4.35*o*	.36	58.50*hh*
Denver	18.00	28.40	3.29	5.15	3.04	2.42	2.05*o*	2.23*o*	.43*ff*	45.00*gg*
Detroit	17.50	27.90	2.35	3.25	2.50	2.65	2.24*f*	2.24	.50	46.00*s*
Kansas City	17.50	28.65	3.50	3.00*ps*	2.65	2.42	2.24*o*	2.24*o*	.38	59.00
Los Angeles	17.50	28.15	3.30*s*	4.50*s*	4.20*s*	3.10*s*	2.00*ss*	*l*	.64*s*	*l*
Minneapolis	17.50	29.65/28.02	....	....	....	2.42*dd*	2.24*hidd*	2.24*hidd*	.41*idd*	44.00*s*
Montreal	....	21.95	2.95*Dff*	4.05*Eff*	3.25*Fff*	4.00*t*	3.65*f*	3.65*f*	1.06*kt*	3.80*kt*
New York	17.50	27.90	....	....	....	2.42*o*	2.24*o*	2.24*o*	.41*oz*	44.00*s*
Philadelphia	17.50	27.90	3.60	3.40/3.65	3.50/4.60	2.54	2.94	2.94	.37	26.00
Pittsburgh	17.50	27.90	2.68	2.85	3.15	2.75	2.60*o*	2.60*o*	.38	49.00
St. Louis	17.50	27.90	....	....	....	2.49	2.31*h*	2.31*h*	.38*y*	51.26
San Francisco	17.50	28.15	2.40	....	3.40	2.58	4.00*aa*	....	.41	.....
Seattle	17.50	28.40	3.07*mee*	2.95*mss*	....	3.45*moca*	2.91*hmee*	....	.50*mss*	52.00*mss*
Toronto	.....	.....	....	....	....	4.00	3.65	....	.90	80.00

‡ Delivered. Note: Red lead in oil 50c higher than white lead in oil. *a* Red lead prices change frequently due to pig lead price changes. *b* U. S. War Dept. Spec. 3-49A. *c* ASTM Spec. D266-31. *d* 80% minimum ferric oxide. *e* 15 lb. *f* Per 432 sq. ft. *g* F.o.b. yard, Roxbury. *h* Per roll. 65 lb. *i* Net carload lot prices; Minneapolis and vicinity. *k* Per cwt. *l* Not used. *m* 1% discount for cash. *n* F.o.b. city. *o* Per 60-lb. roll *p* 6-drum, 50 gal. ea. *q* Per 90-lb. roll. *r* F.o.b. factory, Chicago. *s* 466 Med. *t* Federal tax included: *u* Per 90 lb. square; *v* Per ton. *w* Price to large paint contractors is $1.25 less *x* Mineral surfaced: *y* 55-gallon container. *z* Drums. *aa* Approximate cost per 100 lbs. *bb* Roofers coating and cement; Price per ton. *cc* LCL, truck delivery. *dd* 2% cash discount. *ee* Asphalt pitch in 100 lb. package. *ff* 5-gal. drums; *gg* F.o.b. factory; *hh* Incl. freight. *D*. Std Black. *E*. Ready-mixed. *F*. Over 80% ferric oxide. * Aver. wt. approx. 425 to 550 lbs. drums *d* Freight allowed to destination not exceeding .50 cwt.

SKILLED AND COMMON WAGE RATES—PER HOUR

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor — Building	Common Labor — Heavy Const.
Atlanta	$3.10	$2.50	$2.85	$2.60	$2.75	$2.90	$2.90	$1.33	$1.33
Baltimore	3.20*d*	2.75	3.325*t*	3.10/3.25	3.075*t*	2.975	2.975*t*	1.675*t*	1.675*t*
Birmingham	3.25	2.80	2.925*h*	2.32	2.72	3.00	3.125*h*	1.375	1.475
Boston	3.35*s*	2.925*h*	3.325*t*	3.20	3.30*t*	3.13*ll*	3.20*d*	2.22*t*	2.22*t*
Chicago	3.55*h*	3.30*s*	3.40*h*	3.15*m*	3.625*s*	3.53*t*	3.30*s*	2.50*h*	2.50*h*
Cincinnati	3.325	3.075	3.10*h*	2.85/3.10	3.10	3.28*N*	3.335*Z*	2.12	2.02
Cleveland	3.375*t*	3.325*t*	3.325*t*	3.175	3.325	3.325	3.325*s*	2.575	2.575
Dallas	3.50	2.75	2.875	2.75	3.437	3.00	3.00	1.45	1.45
Denver	3.50	2.85	2.85	2.78	3.375*t*	3.00	3.05	1.875	1.875
Detroit	3.45*ss*	3.21*ew*	3.35*s*	3.20*s*	3.40*dl*	3.52*ll*	3.125*h*	2.55*s*	2.55*s*
Kansas City	3.625	2.75	2.90	3.045	3.325	3.18*o*	3.25*h*	2.105	2.13
Los Angeles	3.40	2.875*t*	3.175*h*	2.72*t*	3.56*ll*	3.20	3.35*s*	2.15*t*	2.15*t*
Minneapolis	3.325	2.90	3.07	2.85	3.00	3.15*n*	3.00	2.15	2.15
New Orleans	3.175	2.60	2.975*m*	2.80	2.80	3.00*h*	3.00*s*	1.475	1.475
New York	4.15*hr*	3.57*hj*	3.975*s*	3.84*j*	4.15*t*	3.63*aa*[2]	3.815*hL*	2.415*t*	2.415*t*
Philadelphia	3.92*i*	3.20	3.63*hM*	3.07/3.82*s*	3.625*S*	3.80*ss*	3.615*s*	1.95	2.25
Pittsburgh	3.625*h*	3.20*h*	3.225*h*	3.35*h*	3.375*h*	3.50	3.375*h*	2.10*h*	1.98*d*
St. Louis	3.62*s*	3.225*h*	3.225*h*	3.125*h*	3.25*h*	3.50*r*	3.30*h*	2.275*h*	2.275*h*
San Francisco	3.65*s*	3.005*s*	3.175*h*	2.835*s*	3.50*ah*	3.80 U	3.35*s*	2.275*s*	2.275*s*
Seattle	3.40*d*	2.764	2.954	2.884	3.254	3.135 X	3.264	2.354	2.354
Montreal*†	2.00	1.80	1.90	1.70	2.00	1.90	2.05	1.25	1.25
Toronto**	2.506	2.35	2.35	2.08	2.506	2.60	2.444	1.30	1.30

* Cost of living bonus now included in basic wage. ‡ Includes 5¢/hr tool replacement. † Plus 8% fringe benefits. ** Incl. 4% vacation fund.

a 6 hr. day. *b* 7 hr. day. *c* Incl. 3% vac. stamp fund plus 7½¢ WF for bricklayers; 4% VF for electricians plus 8¢ WF, 1% PF *d* Incl. 10¢ H&WF. *e* Incl. 10¢ VF. *f* Incl. 6% WF. *g* Incl. 11½¢ WF *h* $2,725 homes & housing plus 7½¢ WF. *i* Incl. 17¢ WF *j* Incl. 10½¢/hr. WF. *k* Incl. 7½¢/hr. WF. *l* Incl. 4% VF. *m* Incl. 5¢/hr WF. *n* Incl. 25¢ H, W, Ins., Vac. & Retirement. *o* Incl. 10¢ PF. 7¢ WF. *p* Incl. 3% WF, 3% PF. *r* Incl. 4% WF and 20¢ PF. *s* Incl. 5% W&PF, 4% VF, 1% NC, 6 PH. *t* Incl. 7½¢ H&WF. *u* Incl. 1½% PF. *v* Incl. 10¢ WF. *w* Negotiating. *x* Incl. 8¢ WF. *y* Incl. 22½¢ WF. *z* Incl. 7½¢ IF, 5¢ H&WF. *A* Incl. 15¢ WF, 15¢ PF & 20¢ B.F. *B* Incl. 3% WF, *C* Incl. 2½¢ H&WF. *D* Plus 6% WF, plus travel pay per day. *F* Plus $4/per day Annuity contrib. *G* Incl. 7¢ WF, 6% VF. *I* Incl. 15¢ H&WF. *J* Incl. 5% WF, 6PH. *K* Incl. 10¢ WF, 12½¢ VF, 7½¢ PF. *L* Incl. 3% WF, 3% PF, 2% VF, 1% EF. *M* Incl. 7½¢ PF. *N* Incl. 1% WF. *O* Incl. 10¢ WF, 1% PF. *R* Incl. 12¢ WF and 1¢ apprentice. *S* Incl. 12½¢ H and WF. *T* Incl. 21¢ H, W & VF. *U* Incl. 7½¢ WF, 4% VF, 1% PF. *W* Incl. 2% VF. *X* Incl. 6¢ VF. & 7½ H & WF *Y* Incl. 7¢ H & WF. *Z* Incl. 8½¢ WF.

MEXICO CITY PRICES

In Pesos, F.o.b. City		Mar. '38	Apr '38
Common Wages—Building (8 hr. day) (Peons)	av. per hr.	1.19	1.19
Common Wages—Heavy Const. (8 hr. day) (Peons)	av. per hr.	1.19	1.19
Skilled Labor Wages			
Carpenters (8 hr. day) 1 cl.	av. per hr.	2.25	2.25
Bricklayers (8 hr. day) 1 cl.	av. per hr.	2.25	2.25
Struct. Iron Workers (8 hr. day)	av. per hr.	1.37*	1.37*
Remachadores.			
Struct. Steel Shapes			
3"–15" x 12 meters	per metric ton	1490.00	1490.00
Reinf. Steel, Corr. Rods			
¼" x 11 meters	per ton	1490.00	1490.00
⅜" x 11 meters	per ton	1490.00	1490.00
½" x 11 meters	per ton	1490.00	1490.00
⅝" x 11 meters	per ton	1490.00	1490.00
¾" x 11 meters	per ton	1490.00	1490.00
1" x 11 meters	per ton	1490.00	1490.00
Gravel truck load of 3½ cu. meters			
Blue Gravel	per tr. load	69.00	69.00
Rose Gravel	per tr. load	62.00	62.00
Cement, Std. Port. (Tolteca)	per ton	160.00	160.00
Lumber			
3rd Class Pine	per M ft.	900.00	1000.00
1st Class Pine	per M ft.	1600.00	1600.00
2nd Class Pine	per M ft.	1300.00	1300.00

* 1st & 2nd floors. Aver rate 4.38

ENR Skilled Average: (Bricklayers, Carpenters, Iron workers): $3.207 **ENR Common Average:** $2.050

SKY HIGH UNDER ITS OWN POWER

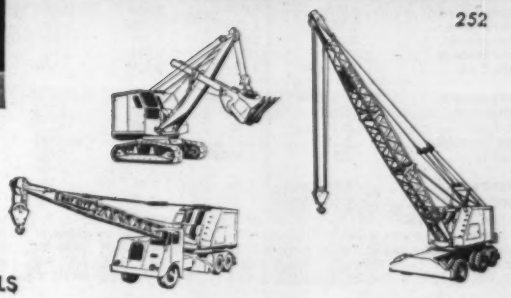
BAY CITY CraneMobile booms up construction profits in Phoenix

The advantages a contractor enjoys with a CraneMobile are neatly explained by H. J. Hart of the H & R Transfer & Storage Co. of Phoenix, contractor on the First National Bank Building shown here . . .

"As you can see we have 135 ft. of boom and jib. We have used this set-up quite a bit now and no use telling you how nice the rig handled. Our rigs are the only ones in Phoenix that can be rigged with 135′ of boom and jib and raised without the help of another crane. You fellows really put together a machine."

That's strong praise, and only a proven crane could earn it. In fact contractors everywhere have found the Bay City CraneMobile an exceptionally efficient money maker for an amazingly wide variety of jobs. Why not write for our catalog today.

252



BAY CITY SHOVELS, INC. • BAY CITY, MICHIGAN

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	GYPSUM PLASTER BOARD tapered edge per Msq ft ½″	⅜″	GYPSUM BOARD LATH plain or perf per Msq ft ⅜″ x 16″ x 48″	GYPSUM SHEATHING tongue & groove per Msq ft ½″ x 2′ x 8′	FIBER BOARD SHEATHING asph impreg & coat per Msq ft ½″ sq ed	¹³⁄₃₂″ T&G	FIBER BOARD INSULATION sq edge, paint per Msq ft ½″	MINERAL WOOL INSULATION† loose, per 40-lb bag -a	3″ batts per M sf	GLASS FIBER INSULATION† loose, per 40-lb bag a	3″ batts per M sf	ALUMINUM FOIL 60¢ Kraft 1 side foil per roll of 250 s. f.	Expansible Blanket 2 layers foil per Msq. ft.
Atlanta	.....	$65.00	$45.00	$75.00	$73.00	.....	$75.00	$1.08	$75.00	$1.45[b]	$56.00	.....	.....
Baltimore	$47.00[f]	41.50[f]	31.00[f]	52.50[f]	63.00[f]	106.00[f]	67.00[f]	1.30	66.00	1.60	45.00	$4.00[g]	$33.50
Birmingham	67.00	56.00	46.75	75.00	72.00	122.00	71.00	1.32	70.00	1.60	75.00	3.46[g]	.....
Boston	46.50[m]	41.00[m]	31.50[m]	48.00[m]	64.00[m]	109.00[m]	79.00[hh]	1.45	75.00	1.40	56.00	5.30	.....
Chicago	67.00	50.00	41.00	57.00	80.00	117.00	75.00	1.60	84.00	.....	62.00[bb]	5.25	.....
Cincinnati	44.01[w]	38.08[w]	30.08[w]	45.81[w]	65.00[w]	110.00[w]	65.00[w]	.....	61.00	1.25	75.00	3.31	45.50[w]
Cleveland	50.00	50.00	40.00	60.00	70.00	111.00	70.00	1.35/1.50	75.00	2.20	60.00	7.76[dd]	.....
Dallas	55.00	52.50	40.00	62.50	73.50	122.50	70.00	1.90	65.00	1.35	65.83	4.25	.....
Denver	60.00	52.50	40.00	60.00	72.90	123.00	71.90	.....	71.00[i]	1.30	50.00	11.00[r]	.....
Detroit	55.00	48.50	33.75	54.00	56.00[ee]	93.00[ee]	54.00[ee]	.....	.....	1.95[b]	.....	.....	.....
Kansas City	65.00	55.00	40.00	65.00	72.00	120.00	75.00	1.40	80.00	1.40	80.00	5.76[d]	.....
Los Angeles	50.00	45.00	0.31[x]	53.00	71.87	121.25	70.00	.....	80.00	1.35[x]	64.00	17.00[x]	25.40
Minneapolis	72.00	63.00	0.40[x]	72.00	70.00	114.00	70.00	1.30	78.00	1.30	78.00	6.50	.....
Montreal	60.00	52.00	39.00	53.00	60.00	.....	62.00	1.00	62.00	1.00	62.00	19.50[x]	49.50
New Orleans	65.00	50.00	45.00	65/70	65.00	100/115	70.00	1.95	79.00	.....	.....	15.66[hh]	36.00
New York	50.00	44.50	34.00	51.00	67.00	108.00	66.00	1.55	69.00	1.90	72.00[i]	5.20	.....
Philadelphia	50.00	48.00	34.00	48.50	67.50	105.00	49.20	.....	63/70	70/75	70/75	5.50/6	34.50/44.50
Pittsburgh	65.00	55.00	40.00	68.00	60.00	102.50	57.50	1.80	70.00	1.80	70.00	4.10	.....
St. Louis	60.00	55.00	40.00	58.50	65.00	115.00	75.00	1.75	75.00	1.30	52.00	3.00	.....
San Francisco	49.00[c]	41.50[x]	0.33[x]	53.00[k]	.....	94.00	60.25	1.60	72.00	1.55	72.00	4.70	52.00
Seattle	57.00	50.50	40.00	59.00	71.40	120.35	70.20	1.50[v]	81.00	1.65[x]	62.00[ee]	4.25[g]	.....
Toronto	61.00	50.00	40.00	64.50	75.00	.....	.....	0.90	47.00	.....	51.00	.....	67.50

[a] for hand packing [b] per 30¢ bag [c] carloads [d] 40¢ kraft paper [e] 56,000 sq ft up quantity [f] full trailer loads [g] 80¢ kraft paper backing [h] LCL [i] flameproof $75.00 [j] 133 lin ft; per 100 roll [k] plain core; asph core $56/M sq ft [l] 2-in: $52/M sq ft [m] 10 ton quantities [n] distributor's siding [o] per Msf rol [p] per sf [r] per cwt [s] per 35¢ bag [u] honeycomb, 1¼-in [v] fob city [x] per sq. yd. [y] 26¢ bag [z] 32¢ bag [aa] fob warehouse [bb] 2″

PLASTER, VERMICULITE AND METAL BUILDING SHEETS & TUBING

	PLASTER† Neat per ton	Gauging per ton	VERMICULITE† Home Insulation pellets	Plaster aggregate	Concrete aggregate[l] Treated	Untreated	ALUMINUM SHEET[k] Flat[f] .102″ th 36″x96″ & 48″x144″	Corr roof .032″ th 35″x12′	STAINLESS STL SHEET*-TYPE 302[y] 20 ga 48″x96–120″	28 ga 36″x120′	COPPER WATER TUBING-TYPE L 2000 ft lots per ft[a] ⅛″[b]	½″[a]
			per bag of 4 cu ft				per lb[f]	per sh[u]	per cwt[kk]	per cwt[mm]		
Atlanta	$29.00	$36.00	$1.45	$1.35	$1.50	.....	$0.359[m]	$7.067[n]	$53.68	$61.18	$14.49[f]	$20.29[f]
Baltimore	21.50	32.00	0.95	1.15	.....	$1.15	0.370	0.377[r]	52.75	60.25	0.1518	0.2129
Birmingham	36.00	43.00	1.55	1.55	1.75	.....	0.389	8.148	54.18	61.68	0.1588	0.2230
Boston	21.00	.....	1.15	1.18	.....	1.30	0.424[e]	23.60[ee]	52.00[dd]	57.50[dd][ff]	0.1588	0.2230
Chicago	24.60	24.60	1.45	1.50	1.50/1.60	.....	0.416[e]	8.40[f][ee]	56.25[f][ee]	63.75[f][ee]	0.1588	0.2230
Cincinnati	25.00[e]	22.00[e]	1.75	1.75	1.85	1.75	0.408	9.72	56.30	68.30[ff]	0.1588	0.2129
Cleveland	26.00	40.00	1.25	1.32	1.40	.....	0.369[ee]	7.569	52.00	59.05	15.88[f]	22.30[f]
Dallas	29.80	31.80	1.20	1.25	1.30	.....	0.379	0.439[r]	55.50	63.00	0.1449	0.2029
Denver	24.00	24.00	1.40	1.30	.....	1.50	0.389	8.339	54.07[ee]	61.57[ee]	0.1449	0.2029
Detroit	24.00	24.00	1.27	1.33	1.42	1.42	0.397	8.919	56.25	63.50	15.00[f][ee]	25.34[f]
Kansas City	30.00	35.00	1.20	1.30	1.40	.....	0.389	8.79	56.77[ee]	64.27[ee]	15.88[f]	22.30[f]
Los Angeles	25.00	26.00	1.25[cc]	1.20[cc]	1.45[cc]	1.25[cc]	0.421	8.71	60.85	68.35	0.1588	0.2230
Minneapolis	31.00	31.00	1.30	1.60	.....	1.80	0.425	7.68	57.01	69.01[ff]	0.1507[d]	0.2115[d]
Montreal	28.80	35.20	1.00	1.30	1.35	1.30	0.364	8.00	54.00	.....	0.206	0.22
New Orleans	35.00	37.00	1.50	1.20	1.25	1.25	0.359	0.366[aa][bb]	56.68	64.18	0.1449	0.2029
New York	23.00	29.00	1.25	1.20	1.40	1.30	0.389[f][ee]	7.74[f]	54.82	62.32	15.88[f]	23.30[f]
Philadelphia	23/25	32.00	1.35	1.35	1.35	1.40	26.50[f][ee]	7.55[f]	53.23[f]	60.98[f]	14.49[f]	20.29[f]
Pittsburgh	25.00	29.00	1.25	1.25	1.30	1.25	0.42	9.19	53.70	59.20	0.1518	0.2129
St. Louis	30.00	37.00	1.25	1.50[ff]	1.60[ff]	1.50	0.402[e]	8.567[e]	53.14[kk]	71.14[kk]	15.88[f][m]	22.30[f][m]
San Francisco	24.00	26.00	1.05	1.03	.....	1.24	0.416[ee]	8.14[ee]	60.65	68.00	0.1449	0.2029
Seattle	33.00	36.50	1.45	1.25[k]	1.65	.....	0.359	7.067	60.50[ee]	68.00[ee]	0.1449	0.2029
Toronto	40.00	42.00	1.20	1.30	1.45	1.35	0.47	19.95	56.00	88.00	0.30	0.28

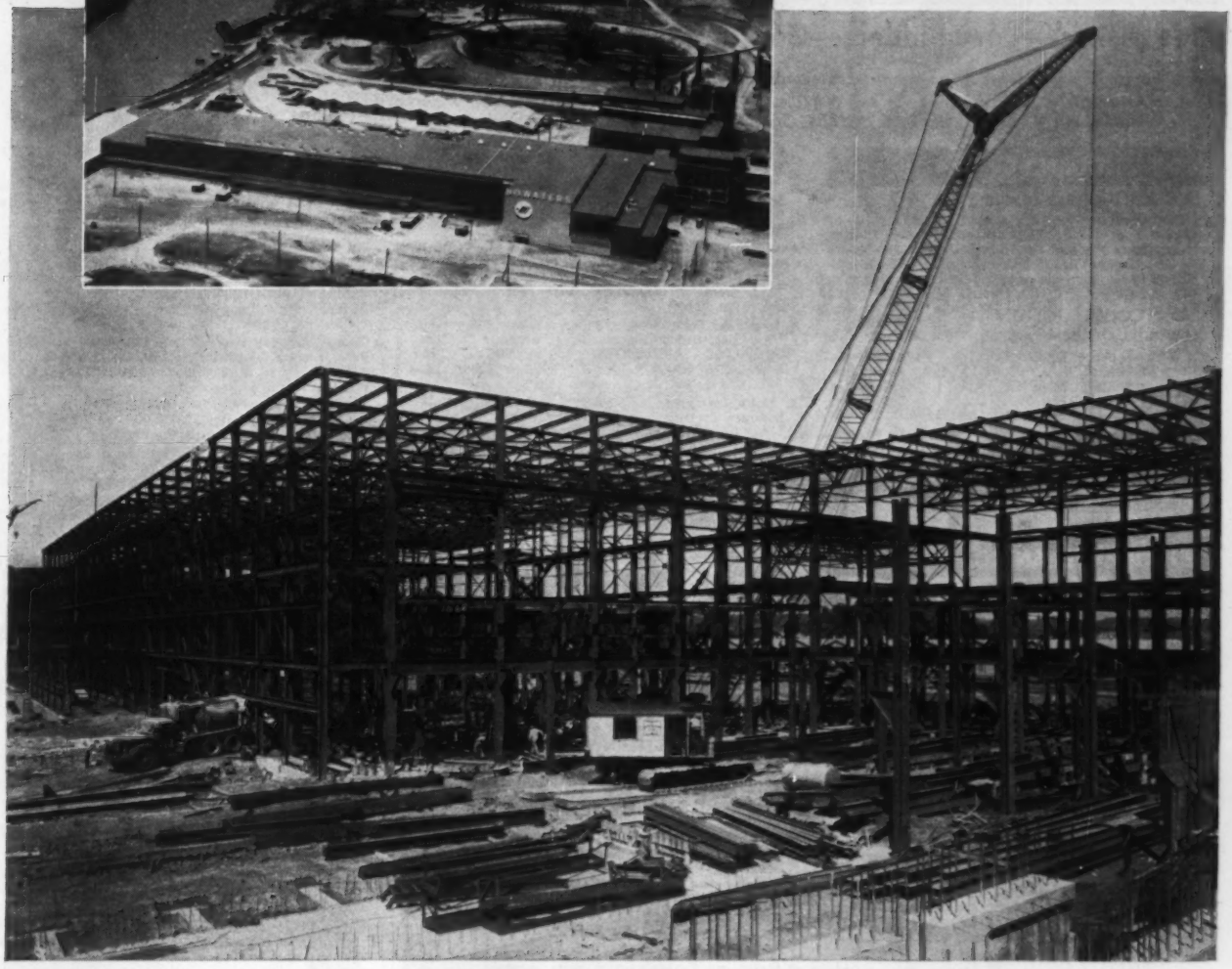
† trucklots, delivered * fob whse ¢ delivered [a] fob city [b] ½″ O.D. [c] ⅝″ O.D. [d] 10M ft & over [e] 2–10M ft; 10M ft & up: $0.1925/ft [f] per 100 ft [g] 5 tons & up; cold roll, anneal & pickled; 2B finish [k] 15M lb [l] 3003 alloy; 1100 alloy: $0.456/lb [f] 1100 & 3003 alloy, mill finish [k] per bag of 3 cu ft [l] treated has air entraining agent; untreated does not [m] 2–10M ft [n] fob plant, fr allow [o] 5M lb & up [p] 100 sq ft quantity [r] 2M lb quantity [s] per lb [u] 36″x96″: 10.81 lb/sh; 48″x144″:21.7 lb/sh [v] 19.31 lb/sh [x] in 4M-lb skids; $0.296/lb in 1M-lb cases [y] 48″x144″ [z] 36″x96″ $13.25/sh [aa] 16M lb & up [bb] fob mill [cc] 26″x6–12′ [dd] add $0.75/cwt for boxing [ee] 4 tons & up [ff] 26 ga [gg] add $2/cwt boxing; $0.75/cwt on skids [hh] Theoretical wt for 48″x96″; 50.4-lb. per sh. [ii] 300-bag lots [jj] per 100-lb bag [kk] mill shipment; add $2 per cwt for immediate del [mm] Theoretical wt: 19.7 lb per sh [nn] Deliv. warehouse means [oo] ¼″ O. D.

EQUIPMENT OPERATOR WAGE RATES

	Truck drivers 1½ T	−4 cy Dump	+4 cy	Tractor Operators incl bulldozers 34–49 hp	70–100 hp	100 & over	Tractor scraper 15–16 cy	Power cranes & shovels ½ cy	¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	1.40	1.40	1.60	2.335	2.335	2.335	2.325	2.85	2.85	2.325	2.10	1.55
Baltimore	1.65[a]	1.80[a]	1.90[a]	2.45/2.60[b]	2.45/2.60[b]	2.45/2.60[b]	2.45/2.60[b]	3.10/3.25[b]	3.10/3.25[b]	2.45/2.60[b]	2.45/2.60[b]	2.25
Birmingham	1.59	1.85[ff]	1.92[ee]	2.46	2.46	2.46	2.60	2.60	2.60	2.46	2.185	1.525
Boston	1.945[c]	.....	.....	2.825[d]	2.825[d]	2.825[d]	2.825[d]	3.40	3.40	3.40	2.555	2.22[e]
Chicago	2.12[fff]	.....	.....	2.85[g]	3.00[h]	3.05[i]	2.85	3.30	3.30	2.95	2.95	....
Cincinnati	2.10[j]	2.20[jjj]	2.30[jjj]	2.85	2.85	2.85	2.85	3.10	3.10	3.10	3.10	3.10
Cleveland	2.42	2.42	2.42	3.05	3.05	3.05	3.05	3.30	3.30	3.05	2.925[k]	2.925
Dallas	1.45	1.45	1.45	1.45/2.625[l]	1.50/2.625[l]	1.50/2.625[l]	1.50/2.625[l]	1.50/2.625[l]	1.60/2.625[l]	1.50/2.625[l]	1.45/2.00[l]	1.45/1.55[l]
Denver	2.00	2.00	2.10	2.00	2.61	2.61	2.61	2.78	2.78	2.61	2.61	2.225
Detroit	2.31[a]	2.31[a]	2.31[a]	3.20[m]	3.20[m]	3.20[m]	3.20[m]	3.30[m]	3.30[m]	3.30[m]	3.025[m]	....
Kansas City	2.065[n]	2.065[a]	2.14[p]	2.25	2.80[q]	2.80[q]	2.80[r]	3.045	3.045	2.66[s]	2.80[t]	2.19
Los Angeles	2.255[u]	2.255[u]	2.285[u]	2.80[m]	2.80[m]	2.80[m]	3.21[m]	3.03[m]	3.03[m]	2.94[m]	2.50[m]	2.41[m]
Minneapolis	2.05	2.05[v]	2.20[w]	2.53	2.75[x]	2.97[x]	2.75	2.97[y]	3.23[y]	2.53	2.42	2.15
New Orleans	1.575	1.575	1.575	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.15	1.575
New York	2.12½[aa]	2.52[bb]	2.52[bb]	3.176[cc]	3.176[cc]	3.176[cc]	3.31[cc]	4.095[cc]	4.095[cc]	3.31[cc]	3.31[cc]	2.78[cc]
Philadelphia	1.825/2.025[u]	1.825/2.025[u]	1.825/2.025[u]	3.07/3.82[m]	3.07/3.82[m]	3.07/3.82[m]	3.07/3.82[m]	3.07/3.82[m]	3.07/3.82[m]	3.07/3.82[m]	2.89[m]	2.05[m]
Pittsburgh	2.125	2.125	2.125	2.875	3.125	3.175	3.175	3.275	3.275	3.175	3.175	2.125
St. Louis	2.10	2.10	2.10	3.125[u]	3.125[u]	3.125[u]	3.125[u]	3.125[u]	3.125[u]	3.125[u]	2.525[u]	2.10
San Francisco	2.10	2.10	2.33[w]	2.845	2.845	2.845	2.845	3.175	3.175	3.005	2.455	2.175
Seattle	2.405[a]	2.405[dd]	2.605[ee]	2.53	2.73	2.73	2.73	3.08	3.08	2.83	2.53[kk]	2.40
Montreal	1.25	1.25	1.25	1.63	1.63	1.63	1.63	1.89	1.89	1.63	1.70	1.50
Toronto	1.40	1.40	1.40	1.85	1.85	1.85	2.25	2.25	2.25	....	2.00	2.00

[a] incl 5¢/hr HWF [b] lower rates, straight time, other broken [c] 2-axle; 10-wheel $2.00; Euclid $2.20 [d] intermediate [e] bldg constr; highway $2.145 [f] less than 2-t [g] blade [h] scoop, bldg [i] scoop, road [j] plus $2 pd by employer for hosp. death benefits to family [k] bldg constr; steel constr $3.30 [l] higher rates are union, other taken from min wage scale approved by County Commissioners Court [m] incl 10¢ H&WF [n] flatbed [o] under 10 cy [p] over 10 cy [q] over 50 hp [r] blade grader [s] form and subgrade [t] single [u] incl 7½¢ HWF [v] up to 6 cy [w] 6–8 cy [x] cat oper [y] up to 3½ cy [z] 3½ cy & over [aa] appl es to local 807 [bb] incl 3% WF 2% PF, 11 PH [cc] incl 5% WF [dd] up to 5 cy [ee] 5 cy & over [ff] 3 T but not incl 5 [gg] 5 tons & over [hh] excavating [ii] crane $2.10, heavy $2.30 [jj] includes 12¢ H, W & PF

This magnificent new plant is capable of producing newsprint nearly twenty feet wide at a rate of 2000 feet per minute.



Main building shown at the completion of steelwork. Engineer for the project was J. E. Sirrine Co., Greenville, S. C., aided by Celli-Flynn of McKeesport, Pa., consulting architects. Construction was a joint venture of Turner Construction Co. and Fraser, Brace & Co.

Titan in Tennessee

The giant mill shown above is Bowaters Southern Paper Corporation's newsprint plant on the Hiwassee River at Calhoun, about 40 miles northeast of Chattanooga. Put into operation in mid-1954, the British-owned plant was designed to produce 130,000 tons of newsprint and 55,000 tons of kraft pulp per year.

Dominating the plant is the huge main building. Over 1000 feet long and covering 5½ acres, it includes a pulp-drying and machine room, a storage-and-shipping bay, a bleaching plant, a stock-preparation room, a grinder room, and shop and stores facilities. Nearby stands the power house which contains four boilers and two 10,000-kw turbo-generators. The third structure serves as a pumping station and filtration plant.

Steelwork Erected Fast with High-Strength Bolts

These three buildings required over 7500 tons of structural steel, fabricated by Bethlehem at our shops in Rankin and Leetsdale, both in western Pennsylvania.

Shop connections were riveted. However, all field joints were bolted. Out of the 196,635 bolts used, 170,203 were high-strength bolts meeting ASTM A-325. The remainder were common machine bolts.

High-strength structural bolting, a technique pioneered by Bethlehem, assured tighter joints than field-driven rivets. In addition, fewer men and less equipment were required, and the job was materially speeded. Thanks to bolting, and to meticulous job planning, Bethlehem crews completed erection in only 20 weeks.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

▲† **Connecticut** — SPECIAL A.A.A. FACILITIES — BA 5/27—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., Special A.A.A. Facilities, Sites HA-36, HA-67, HA-85, Greater Hartford Area, ENG-19-016-55-123. $2,500,000. Plans deposit $50. Crandall Eng. Co., 261 Frankin St., Boston, Mass., engr. CD 11/15.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Tandy & Allen Constr. Co., Inc.,** 280 Hackensack Ave., Hackensack, N. J., LB $1,195,460. Air National Guard Facility, Municipal Airport, ENG-19-016-55-100, BURLINGTON, VT. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Apr. 21. CD 4/5.

▲† **Carlo Bianchi & Co., Inc.,** 24 Union Ave., Framingham, Mass. LB $2,903,458, est. $2,000,000-$2,500,000. aircraft parking aprons, taxiway, warm-up pad, calibration hardstands, Hanscom Air Force Base, ENG-19-016-55-76, BEDFORD, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Apr. 20. CD 4/12.

MIDDLE ATLANTIC

BIDS ASKED—BUILDINGS

▲ **Md., Rockville**—SCHOOL—BA 5/12—Montgomery Co. Bd. Educ., Northwest Bethesda High School, Bethesda. $2,000,000. Plans depcsit $100. Ronald Senseman, 327 Carroll Ave., Takoma Park, archt. CD 8/2.

▲ **N. J., Trenton**—HOSPITAL—BA 5/26—State Div. Purchases & Property, State House, Trenton, state hospital addns., alterations. $1,200,000. Chester I. Duncan, Lewis Tower Bldg., Phila., Pa., engr. Kramer, Hirsch & Carchidi, 115 W. State St., archts. CD 8/27.

▲ **D. C., Wash.**—REACTOR—Bids Asked—Atomic Energy Comn., 1901 Constitution Ave. N.W., Zone 25, is inviting private industry to build and operate an engineering test reactor to facilities to test radiation effects on cores, fuel assemblies and other reactor parts. Estimated cost is $10,000,000-$15,000,000. Plans must be submitted by July 1, 1955. Work is to be done with private funds and must start by October 1955.

▲ **N. J., Paramus**—SHOPPING CENTER—Bids Asked—Allied Stores Corp., 401 Fifth Ave., New York, N. Y., earth moving and excavating for Regional Shopping Center, Bergen Mall, Total est. $60,000,000. John Graham, Dexter Horton Bldg., Seattle, Wash., archt. CD 5/27/52.

SOON LETS CONTRACT—BUILDINGS

▲ **D. C., Wash.**—STORE—The Ballinger Co., archt., 121 N. Broad St., Phila., Pa., soon lets contract retail department store for Sears, Roebuck & Co., 4640 Roosevelt Blvd., Phila., Pa. $2,700,000. CD 3/24/53.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Great Lakes Dredge & Dock Co.,** 17 Battery Pl., New York 4, N. Y., LB $1,449,934, dredging to depth of 37 ft. below mean low water involving removal approx. 510,900 cu. yd., place measurement, all material, incl. ledge rock from New York and New Jersey Channels, Sect. 4, Dock Area 2, Richmond Co., N. Y. and Union Co., N. J., CIVENG-30-075-55-54, NEW YORK-NEW JERSEY. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Apr. 19. CD 4/19.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Old Chester Hills Homes,** c/o Herman H. York, archt., 90-04 161 St., Jamaica, N. Y. Owner Builds. $1,000,000. 51 HOUSES, Little Plains and Cuba Hill Rds., HUNTINGTON, N. Y.

▲ **Radcliff Manor Homes,** c/o Herman H. York, archt., 90-04 161 St., Jamaica, N. Y. Owner Builds. $2,300,000. 98 HOUSES, Tanyard Lane and Radcliff Manor, HUNTINGTON, N. Y.

▲ **Zoranne Gardens Homes,** c/o Kern Realty Co., 124-26 Queens Blvd., Kew Gardens, N. Y. Owner Builds. $4,500,000. 270 HOUSES, Larkfield Rd., north of Jericho Turnpike, HUNTINGTON, N. Y.

▲ **Melba Realty Corp.,** c/o G. M. P. Realty Corp., 2398 Hempstead Turnpike, East Meadow, N. Y. Owner Builds. $1,000,000. 70 HOUSES, 35-acre tract North Middletown and Ludvigh Rds., MANUET, N. Y.

▲ **Lex-56th Corp.,** c/o Greenberg & Ames, Archts., 303 Fourth Ave., New York 10, N. Y. Owner Builds. $1,500,000. 15 story APARTMENT, 140 E. 56 St., southeast corner of Lexington Ave., NEW YORK, N. Y.

▲ **Bonwit Constr. Co.,** 370 Lexington Ave., New York 17, N. Y. Owner Builds. $4,800,000. 160 HOUSES, 80-acre tract, Ridge St. and Lincoln Ave., RYE, N. Y. Henry A. Lockwood, Jr., 22 Purchase St., Rye, N. Y., archt.

▲ **Thomas Taylor,** 5112 Bay Blvd., Brant Beach, N. J. Separate Contracts, $29,000,000. 2,900-unit RESIDENTIAL DEVELOPMENT, High Bar Harbor, BARNEGAT LIGHT, N. J.

▲ **Cinderella Homes, Inc.,** 5 Haddon Ave., Haddonfield, N. J. Separate Contracts, $2,000,000. RESIDENTIAL DEVELOPMENT, Gloucester Twp., BLACKWOOD, N. J. Dante J. D'Anastasio, 1815 Federal St., Camden, N. J., archt.

▲ **Anchorage Point View,** c/o Henry Watson, 613 White Horse Pike, Haddon Heights, N. J., Separate Contracts, $6,700,000, RESIDENTIAL DEVELOPMENT, Shore Drive, EGG HARBOR, N. J. William Duble, 1113 Park Dr., Erlton, N. J., archt.

▲ **Philip Levin,** 254 Jericho Turnpike, Mineola, N. Y., Separate Contracts, $4,800,000. 600-unit RESIDENTIAL DEVELOPMENT, LAKEWOOD, N. J. Feldhaus & Engel, 2 Woodfield Rd.. West Hempstead, N. Y., engrs.

▲ **Sunset Lakes Homes Builders, Inc.,** c/o Frank Collins, P. O. Box 340, Bala Cynwyd, Pa., Separate Contracts. $1,500,000. RESIDENTIAL DEVELOPMENT, Sunset Lakes, LUMBERTON, N. J. Dante J. D'Anastasio, 1815 Federal St., Camden, archt.

▲ **Ramsey Park Homes,** c/o C. J. Kordys, archt., 116 Passaic St., Passaic, N. J. Owner Builds, $1,400,000. 100 HOUSES on tract in South Central Ave., RAMSEY, N. J.

▲ **Woodbury Village, Inc.,** c/o William Seltzer, 1025 Witherspoon Bldg., Phila., Pa., Separate Contracts $1,300,000, RESIDENTIAL DEVELOPMENT, West Deptford Twp., THOROFARE, N. J. Dante J. D'Anastasio, 1815 Federal St., Camden, N. J., archt.

▲ **Transonic Co.,** 8 W. Baltimore Ave., Lansdowne, Pa. Separate Contracts. $2,500,000. RESIDENTIAL DEVELOPMENT, Candlewood Rd., etc., BROOMALL, PA.

▲ **Turner Constr. Co.,** 1500 Walnut St., Phila., Pa. CA $2,500,000. OFFICE and CLUB facilities, KING OF PRUSSIA, PA. Graphic Arts Co.-Operative Center, 931 Lancaster Ave., Bryn Mawr, Pa. Hugh A. Stubbins Assocs., 103 Pleasant St., Lexington, Mass., archts.

▲ **Wallace Eng. & Constr. Co.,** Bryn Mawr, Pa., LB $1,032,500, general contract Junior-Senior HIGH SCHOOL, Lima, MEDIA, PA. Central Delaware County Joint School Dist., Media, Pa. Bids Apr. 14. CD 3/30.

▲ **Wark & Co.,** 1920 Sansom St., Phila., Pa. CA $1,269,000 general contract, Riverview HOME for Indigent, and storm, sanitary and water lines PHILA. PA. Dpt. Procurement, City Hall Annex, Phila., Pa. Bids Mar. 21. CD 3/25, under LB.

▲ **Jayan Development Co.,** Att. Mr. Novak, 1211 Chestnut St., Phila., Pa. Separate Contracts, $3,500,000. RESIDENTIAL DEVELOPMENT, Bustleton Ave., PHILA., PA. Henry S. Berg, 1411 Walnut St., Phila., Pa. archt.

▲ **Owner,** c/o Max Haupt, engr., 229 N. 60 St., Phila., Pa., Separate Contracts. $3,250,000. 1 and 2 story, 420x440 ft., brick, block INDUSTRIAL BLDG. PHILA., PA.

▲ **Williams Development Co.,** Box 31, Fort Washington, Pa. Separate Contracts. $1,000,000. 66 RESIDENCES, Bloomfield St., etc., PHILA., PA.

▲ **Clairmont Constr. Co.,** 529 Brookhurst Rd., Narberth, Pa. Separate Contracts. $3,000,000. 160 RESIDENCES, E. Spring Mill Rd., VILLANOVA, PA. Edward Geddes, 844 Montgomery Ave., Narberth, Pa., archt.

▲ **Morrow Bros., Inc.,** 2315 N. Charles St., Baltimore 18, Md. CA $2,004,700. masonry Sudbrook Junior High SCHOOL, Milford Mill and Rockridge Rds., near Pikesville, TOWSON, MD. Baltimore Co. Bd. Educ., Aigburth Rd., Towson, Md. CD 4/4, under LB.

▲ **Robino Constr. Co.,** 1925 W. 4 St., Wilmington, Del., Separate Contracts, $1,462,000. 170-unit RESIDENTIAL DEVELOPMENT Milltown Rd., WILMINGTON, DEL.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

SOUTH

BIDS ASKED—BUILDINGS

▲ **Va., Portsmouth**—HOUSING—BA 5/17—Portsmouth Redevelopment & Housing Auth., 19 Columbus Ave., 148 unit housing $1,000,000. Williams, Coile & Blanchard, 35 and Virginia Ave., Newport News, archts. CD 5/14.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Strogher Barge Co.,** 189 Cain St. N. E., Atlanta, Ga. CA. $1,000,000. downtown MOTEL, Courtland and Baker Sts., ATLANTA, GA. Heart of Atlanta Motel, Inc., C & S National Bank Bldg., Atlanta, Ga.

▲ **Kenad Constr. Co.,** 972 E. 25 St., Hialeah, Fla. CA, $1,500,000, 151 RESIDENCES various sizes, HIALEAH, FLA. Adken Land Co., c/o R. J. Schneider, archt., 1234 S.E. 8 Ave., Hialeah, Fla. Awarded Apr. 20.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲ **O., Cincinnati**—BA 5/17—City, City Hall, Contr. No. 5, (sludge driers and incinerators) for Mill Creek Sewage Plant. $1,200,000. Plans deposit $25. Havens & Emerson, Leader Bldg., Cleveland, consult. engrs. CD 4/1.

BIDS ASKED—BUILDINGS

▲ **Ill., Belleville**—HOSPITAL—BA After 6/1—Protestant Hospital Builders Club, Inc., Oliver J. Joseph, pres. and W. Shiekedanz, secy., 223 W. Main St., 86-bed general hospital, adjacent to Bellevue Park, $1,500,000. Extended date. Hellmuth, Yamasaki & Leinweber, 825 Locust St., St. Louis 1, Mo., archts. CD 12/23.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Turner Constr. Co.,** 420 Lexington Ave., New York 17, N. Y., CA, $6,000,000. general contract two 640-unit APARTMENTS in area cleared east of South Parkway on E. 33 St., CHICAGO, ILL. New York Life Insurance Co., 51 Madison Ave., New York, N. Y. Bids Apr. 5. CD 3/15.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

Tex., **Brownsville** — DOCKS — BA 5/25 — Bd. Comrs. Brownsville Navigation Dist. of Cameron Co., at office F. W. Hofmokel, genl. mgr., Navigation District Bldg., constr. Docks No. 10, 11, 12 and 13, incl. driving 104,000 lin. ft. steel sheet piling; 60,000 lin. ft. concrete piling; 7,000 cu. yd. rein.-con. in bulkhead; 67,000 sq. yd. concrete dock; railroad constr., water distr. and other misc. constr. items. Plans deposit $100. Cameron Eng. Co., Maltby Bldg., consult engr.

(Continued on page 66)

THE DRIVEN JOINT THAT LOCKS A STEEL BUILDING TOGETHER INSTANTLY

TWENTIETH CENTURY ACHIEVEMENT IN REDUCING CONSTRUCTION TIME

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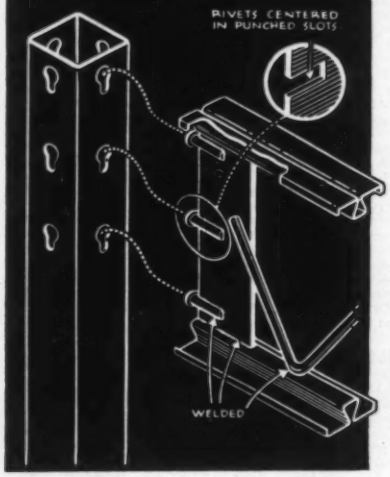

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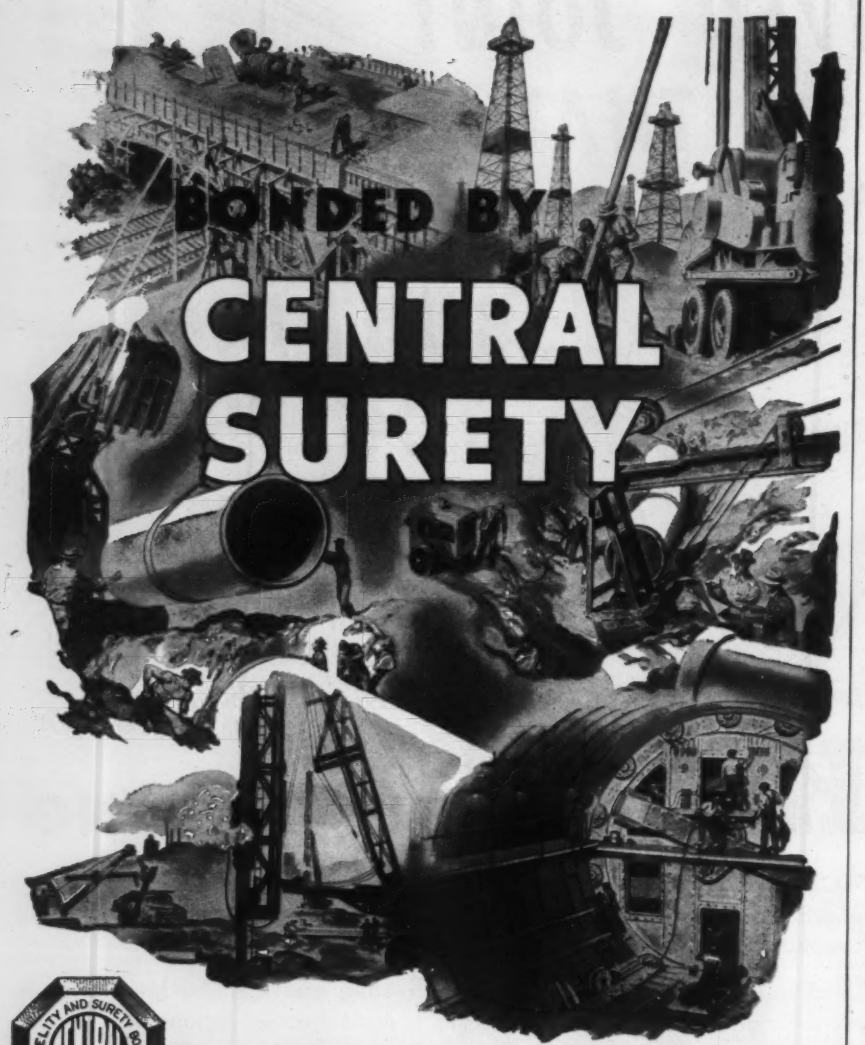

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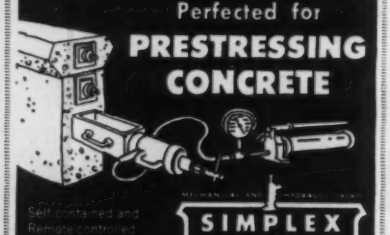

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for Foundations, Dams, Bridges and all Heavy Structures
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Tinney Drilling Co.

Grafton, W. Va.

(Continued from page 64)

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Sharp Bros. Constr. Co.,** 1014 E. 19 St., Kansas City, Mo., **$1,218,000, est. $1,105,000,** aprons for Mid-Continent International Airport, north of Parkville, KANSAS CITY, MO. City, City Hall, Kansas City, Mo. Burns & McDonnell Eng. Co., 95 and Troost Ave., Kansas City, Mo., engr. Bids Mar. 1. awarded Apr. 20. CD 8/12/52.

▲† **Lawless & Alford, Inc.,** Box 600, Austin, Tex., CA **$2,514,178,** airmen's dormitories and mess bldgs., Clinton-Sherman Air Force Base, NOY 77555, CLINTON, OKLA. Bureau Yards & Docks, Dpt. Navy, Bldg. 16, New Orleans (Algiers), La. Bids Mar. 24. CD 4/4, under LB.

TEXAS—State Hy. Comn., Austin,

Tex.—**Bryan & Hoffman,** P.O. Box 390, Plainview, Tex. LB **$91,273,** grading, structures, base, surf. 8.086 mi. Hy. FM 94, Proj. S 226 (2), Motley Co., LB **$104,194,** wid'n., grading, structures, base and surf., 14.798 mi. Hy. FM 40, Proj. C 1041-2-7, Lubbock Co.;

Tex.—**Cage Bros.,** 6959 San Pedro St., San Antonio, Tex., LB **$164,902,** grading, structures, base, surf. 10.65 mi. Hy. FM 237, Proj. R 941-3-1, etc., DeWitt and Victoria Counties; LB **$2,082,447,** concrete base, hot mix b. conc. pavement 6.729 mi. Hy. US 81 and SH 346, Proj. UI 264 (17), etc., Bexar Co.;

Tex.—**Centex Paving Co.,** 217 K-W Bldg., San Antonio, Tex., LB **$129,553, grading,** structures, base, surf. 13.165 mi. Hy. FM 1193, Proj. 2032-1-1, etc., Jones Co.;

Tex.—**Collins Constr. Co. of Texas,** P.O. Box 1192, Austin, Tex., LB **$75,691,** hot mix b. conc. 11.832 mi. Hy. US 81 and 79, Proj. C 15-8-25, etc., Williamson Co.; LB **$179,861,** flexible base, b. conc. 4.253 mi. Hy. HS 71, Proj. F 302 (11), Travis Co.;

Tex.—**J. M. Dellinger, Inc.,** P.O. Box 4227, Corpus Christi, Tex., LB **$83,612,** grading, structures, base and surf., 9.773 mi. Hy. FM 2040 and FM 1684, Proj. S 1962 (1), etc. Aransas and Refugio Counties;

Tex.—**Flenniken Constr. Co.,** P.O. Box 634, Shreveport, La., LB **$86,592,** grading, structures, base, surf. 4.199 mi. Hy. FM 120, Proj. S 443 (1), Grayson, Co.;

Tex.—**Foley & Williams, Contr.,** 243 Owen Bldg., Tyler, Tex., LB **$81,493,** seal coat 83.969 mi. Hy. SH 63-87, FM 92, 1008, etc. Proj. C 214-3-5, etc., Newton, Jasper, Tyler and Liberty Counties;

Tex.—**Gulf Bitulithic Co.,** P.O. Box 2572, Houston, Tex.; LB **$86,254,** hot mix b. conc. 21.578 mi. Hy. US 175, Proj. C 197-4&5-19&15, Kaufman Co.;

Tex.—**E. W. Hable & Sons,** P.O. Drawer 650, Corsicana, Tex., LB **$266,301,** grading, structures, base and surf. 10.672 mi. Hy. FM 918, Proj. R. 1663-3&4-1&1, Navarro Co.;

Tex.—**Olene Hanson,** 4906 Griggs Rd., Houston, Tex., LB **$233,878,** grading, drainage, structures, pavement and railroad underpass 0.653 mi. Hy. US 59, Proj. FG 426 (10), San Jacinto Co.; LB **$592,493,** flexible base, b. conc. 7.327 mi. Hy. US 75, Proj. IN 519 (16), Harris Co.;

Tex.—**Hugh McMillan,** P.O. Box 1227, El Paso, Tex., LB **$402,556,** grading, structures, flexible base, two course surf. tr. 4.568 mi. Hy. US 90, Proj. F 378 (10), Brewster Co.;

Tex.—**Pelphrey-Farquher, Inc.,** Electric Bldg., Fort Worth, Tex., LB **$824,778,** grading, structures 10.398 mi. Hy. US 81, Proj. IN 113 (16), etc., Hill Co.;

Tex.—**M. E. Ruby,** San Marcos, Tex., LB **$192,776,** grading, structures, base, surf. 9.364 mi. Hy. SH 304 and FM 1116. Proj. 573-3-4, etc. Gonzales Co.;

Tex.—**Henry Stafford,** P.O. Box 1047, Lubbock, Tex., LB **$85,653,** grading, base, surf. 11.121 mi. Hy. FM 1219, Proj. S 1583 (2), Ward Co.;

Tex.—**Strain & Brown, Inc.,** P.O Box 1057, San Angelo, Tex., LB **$661,129,** pavement widn. and hot mix b. conc. 20.398 mi. Hy. US 70, Proj. F 540 (3), and F 536 (4), Foard Co.;

Tex.—**Wes-Tex Constr. Inc.,** Borger, Tex., LB **$111,025,** extend concrete structures and widn. timber bridges 0.328 mi. Hy. ST 35, Proj. F 817 (1), etc. Aransas and Refugio Counties. Bids Apr. 19. CD 4/4, 4/6, 3/29.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **I. E. Millstone Constr. Co.,** 8510 Eager Rd., Brentwood 17, Mo. CA Est. **$1,000,000.** 1 story, bsmnt., 122x290 ft. Bldg. A, 1 story, bsmnt., 122x314 ft. Bldg E, addnl. brick, concrete stone steel bldgs. for Westroads SHOPPING CENTER, Brentwood Blvd. and Clayton Rd., RICHMOND HEIGHTS, (ST. LOUIS 19 P. O.), MO. Stix, Baer & Fuller Co., Arthur B. Baer, pres., 6 St. and Washington Ave., St. Louis 1, Mo. Bids Apr. 12. CD 4/5.

▲ **Bowden Constr. Co.,** Odessa, Tex., CA **$1,500,000.** GAS PLANT expansion to increase capacity to 40 m. cu. ft. daily, MIDLAND, TEX. Odessa Natural Gas Plant, c/o W. D. Noel, pres., Midland, Tex. CD 4/22.

▲ **Robert E. McKee General Contractor, Inc.,** Box 1706, Santa Fe, N. M., CA **$1,454,760.** Phase 1 women's DORMITORY, ALBUQUERQUE, N. M. University of New Mexico, Bd. of Regents, Albuquerque, N. M. Bids Mar. 1. CD 3/28, under LB.

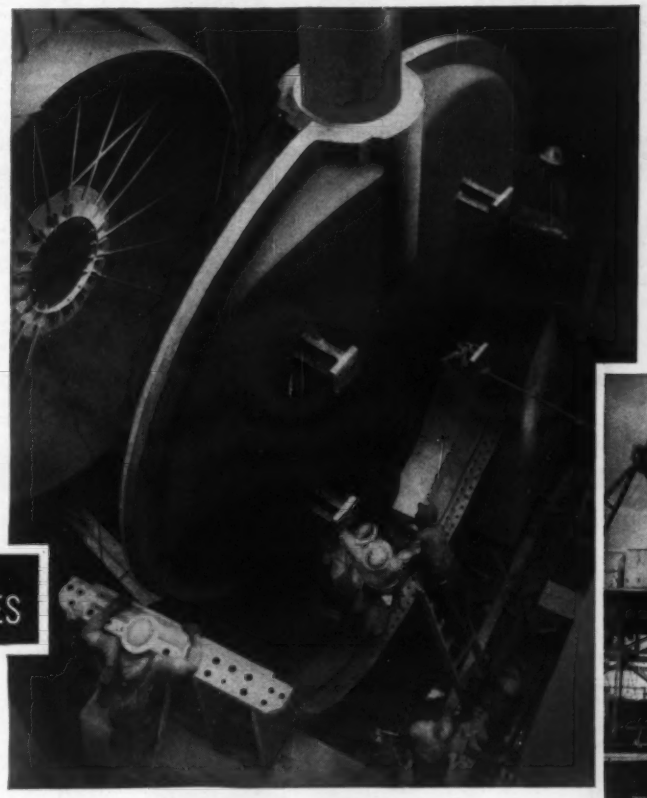
FAR WEST

BIDS ASKED—BUILDINGS

▲ **Calif., Long Beach**—RECREATION and EXHIBIT—BA 5/18—City, 205 W. Broadway, recreation and exhibit hall $3,500,000. Plans deposit $100. Kenneth S. Wing, 30 Linden Ave., archt. CD 2/1/54.

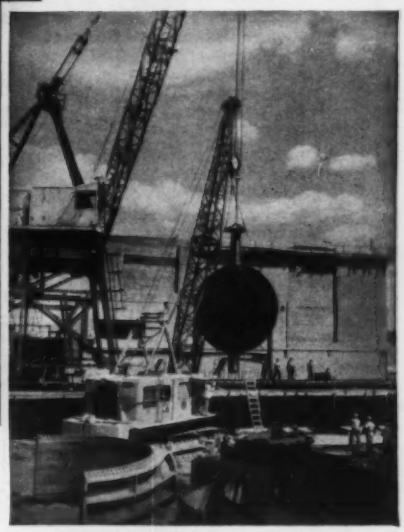
▲ **Ariz., Fort Huachuca**—HOUSING—BA About 5/27—U. S. Eng., 74 New Montgomery St., San Francisco, Calif., construct, manage and finance 500-unit mili-

(Continued on page 68)



An 18′ butterfly valve disc is shown here during installation at Blakely Mountain in Arkansas. Note the streamlining of the welded disc.

Photos—Vicksburg District, Corps of Engineers



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BUTTERFLY VALVES

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SMS Butterfly Valve seals cut leakage to a minimum. Disc seals are adjustable from either inside or outside, whichever is specified. Specially-developed SMS trunnion seals are essentially drop-tight.

With inside adjustment, the disc may be seated directly on the plate steel housing, as at Blakely Mountain, illustrated above, and as at Fort Peck, Montana. Here a 16 ft. dia. valve, recently tested after 14 years of service, had *less than ½ gpm leakage*.

SMS welded discs and housings assure greater freedom from the material defects of castings and permit more economical construction. The photo illustrates the streamlining possible with welded steel plate construction. This holds head losses and turbulence to a minimum.

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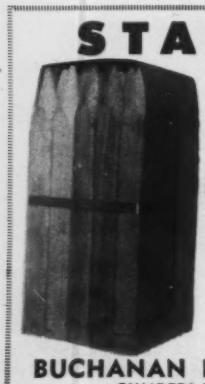
STAKES



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¾"x1¾"–12"	6.15	5.60
–15"	6.60	6.00
–18"	7.50	6.50
–24"	11.00	10.00
–36"	16.00	14.00

Prices net F.O.B. Cumberland, Md.

BUCHANAN LUMBER CO.

CUMBERLAND, MD.

(Continued from page 66)

tary housing at Army Electronic Proving Ground. $4,000,000. CD 3/10, under Public Buildings.

▲ **Calif., San Jose**—STORE—BA 6/1—Sears, Roebuck & Co., 2650 E. Olympic Blvd., Los Angeles, department store, Race and San Carlos Sts. $2,500,000. Loubet & Glynn, 400 Montgomery St., San Francisco, archts. CD 12/1.

SOON LETS CONTRACTS—BUILDINGS

▲ **Calif., Fresno**—STORE—Sears, Roebuck & Co., 925 S. Homan St., Chicago, Ill., soon lets contract department store in Manchester Business Center $3,000,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Peter Kiewit Sons Co.**, 1950 S. Colorado Blvd., Denver, Colo., LB **$3,458,285**, runway and supporting facilities, HILL AIR FORCE BASE, UTAH. U.S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Apr. 19. CD 4/7.

▲† **Hoffman Constr. Co.**, 715 S.W. Columbia St., Portland, Ore., LB **$1,392,985**, two pumping plants addns., Hanford Works, RICHLAND, WASH. Atomic Energy Comn. Richland, Wash. CD 3/30, under LB.

▲ **Guy Atkinson Co.**, 10 W. Orange St., South San Francisco, Calif., **Arundel Corp.**, Pier 2, Pratt St., Baltimore, Md., and **L. E. Dixon**, 409 S. California St., San Gabriel, Calif., LB, **$32,940,291**. Donnels and Beardsley Dam, Stanislaus River, Sierra Nevada, CALIFORNIA. Oakdale Irrigation District and South San Joaquin Irrigation Dist., 322 D. St., Oakdale, Calif. Bids Apr. 21. CD 3/8.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Tolboe & Harlin Constr. Co.**, 3091 S. Main St., Salt Lake City, Utah, LB **$1,173,887**, Womens RESIDENCE HALL, PROVO, UTAH. Brigham Young University, Provo, Utah. CD 6/8/53.

▲ **Dearborne Development Co.**, 640 Bancroft St., San Leandro, Calif., Owner Builds, **$1,644,000**. 137 HOMES, Subdivision, ALAMEDA, CALIF.

▲ **B & E Buiding Co.**, 460 S. Beverly Dr., Beverly Hills, Calif., CA **$2,024,000**. 184 frame, stucco DWELLINGS in Tract 20418, GARDENA, CALIF. Condon Land Co., 258 S. Beverly Dr., Beverly Hills, Calif.

▲ **Devon Constr. Co.**, 739 N. Highland Ave., Los Angeles, Calif., CA, **$1,107,700**, 112 frame, stucco DWELLINGS, Turlock Rd., Neargrove Rd., and Jalisco Rd., LA MIRADA, CALIF. Parkwood-La Mirada Unit II, 739 N. Highland Ave., Los Angeles, Calif. Richard Leitch, 2445 E. Washington St., Pasadena, Calif., archt.

▲ **Gust K. Newberg Constr. Co.**, 11732 S. Norwalk Blvd., Norwalk, Calif., CA, **$3,787,800**, general contract Robert A. Millikan HIGH SCHOOL, LONG BEACH, CALIF. Bd. Educ., 715 Locust Ave., Long Beach, Calif. Grand total $4,999,625. Bids Apr. 15, awarded Apr. 19. CD 4/21, under LB;

West Coast Plumbing & Heating Co., 5715 W. Adams Blvd., Los Angeles, Calif., CA, **$680,819**, mechanical work (Long Beach HS);

Hoffman & Sons, 1100 Gaviota St., Long Beach, Calif., CA, **$530,946**, electrical work (Long Beach HS).

▲ **Owner**, c/o Angus McSweeney, archt., 612 Howard St., San Francisco, Calif. Owner Builds. **$1,760,000**. 176 home subdivision, MARYSVILLE, CALIF.

▲ **Westclor Homes, Inc.**, 7208 Beverly Blvd., Los Angeles, Calif., Owner Builds, **$1,079,236**, 134 frame, stucco DWELLINGS, Tract 4665, ONTARIO, CALIF.

▲ **Avery Land Co.**, 1124 S. Beverly Dr., Los Angeles, Calif. Owner Builds. **$1,080,000**. 108 frame, stucco DWELLINGS, 39, Modesto and Fernadle Sts., SAN BERNARDINO, CALIF.

CANADA

BIDS ASKED—BUILDINGS

▲ **Que., Montreal**—APARTMENT—BA 5/9—Greenvale Holdings Corp., and Atlas Enterprises Corp., c/o Greenspoon, Freedlander & Dunne, archts., 4151 Sherbrooke St. W. 9 story, above ground, 2 below ground, 90x257 ft. rein.-con., frame, brick, block apartment, St. Catherine St. W. at Metcalfe Ave. $1,500,000.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Turnbull & Gale Contg. Co. Ltd.**, 168 East 2 St., Vancouver, B. C., CA **$1,490,948**, Churchill High SCHOOL, 57 Ave. and Heather St., VANCOUVER, B. C. School District 39, 1595 West 10 Ave., Vancouver, B. C. Bids Mar. 31. CD 4/19, under LB.

▲ **Crosley Constr. Co.**, 64 Newton St., Barrie, Ont., Owner Builds, **$1,900,000**. 186 HOUSES in project at various locations Oak St., BARRIE, ONT. Dr. E. G. Faludi, 614 Church St., Toronto, Ont., engr.

▲ **J. H. Ross Constr. Co.**, 79 Huntley St., Toronto, Ont., CA, **$1,000,000** 8 story 104-suite, L-shaped, 60x300 ft., concrete steel brick rein.-con. APARTMENT, Mt. Royal Ave. and Regal Rd., TORONTO, ONT. Owner, c/o Crang & Boake, archts. 79 Huntley St., Toronto, Ont. Onasick & McMurty, 79 Huntley St., Toronto, Ont., engrs. Awarded Mar. 30.

Proposed Projects

WATER SUPPLY

▲ **S. C., Greenville**—City, J. Kenneth Cass, mayor, City Hall, watershed proj. on North Saluda River near Travelers Rest. **$8,901,000.**

▲ **Wis., Wauwatosa**—City, City Hall, new wells and water supply system exten. **$2,000,000.** Gates, Weiss & Kramer, 611 N. Broadway, Milwaukee, consult. engrs. F. Kuchuch, city engr.

▲ **Que., Hull**—City, filtration plant. **$2,000,000.** Lalonde, Girouard & Letendre, 7379 St. Hubert St., Montreal, consult. engrs.

▲ **Que., Montreal**—City, City Hall, C. E. Longpre, city clk., addnl. filter unit at city waterworks plant, Atwater Ave. and Joseph St., **$2,500,000.** L. L'Allier, ch. engr. CD 9/13/44.

SEWERS, WASTE DISPOSAL

▲ **Mo., St. Louis**—City, c/o Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, Zone 3, bond election May 26, rubbish incinerator bldg. and equip. in North St. Louis, **$2,000,000**; garbage-grinding plant, **$250,000**; garage headquarters for garbage section, **$150,000.** CD 3/18/49.

▲ **O., Columbus**—City, City Hall, expansion of Jackson Pike Sewage Treatment Plant. **$7,266,000.**

▲ **Ont., Toronto**—Municipality of Metropolitan Toronto, 67 Adelaide St. E., constr. Coxwell Ave. trunk sewer from Don River to main sewage plant on Ashbridge's Bay. **$2,800,000.** Gore & Storrie, 1130 Bay St., and James F. MacLaren Assocs., 705 Yonge St., consult. engrs. CD 9/3.

BRIDGES

▲ **Mo., St. Louis**—City, Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, Zone 3, bond election May 26, constr., imprvs. to bridges and viaducts, **$11,400,000.**

STREETS AND ROADS

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Gloucester—1.7 mi. express hy. exten. Rte. 128 to State Fish Pier. **$1,200,000.**

▲ **Mich., Detroit**—City, Glenn Richards, comr. Dpt. P. Wks., City-County Bldg., wid'n. Woodward Ave. by 60 ft. to 180 ft. between Fort and Congress Sts. **$1,300,000.** M. F. Wagnitz, city engr. CD 3/30/43.

▲ **Missouri**—City of St. Louis, c/o Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, St. Louis, Zone 3, $18,000,000 bond election May 26 to finance city's share of cost, constr. Daniel Boone, Mark Twain and Ozark Expressways, St. Louis. Total est. **$93,000,000.** CD 2/24/44.

▲ **Mo., St. Louis**—City, c/o Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, Zone 3, bond election May 26, street wid'n., imprvs. and related work, **$11,615,000**; resurf. various streets and alleys, **$2,000,000.**

EARTHWORK, WATERWAYS

▲ **Mo., St. Louis**—City, Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, Zone 3, **$7,547,000**, bond election May 26 to finance city's share of cost, system of levees, floodwalls, pumping stations and sewers to protect 11 mi. stretch of Mississippi River waterfront.

AIRPORTS

▲ **Newfoundland, Gander**—TERMINAL—Dpt. Transport, Hunter Bldg., Ottawa, Ont., plans by Durnford, Bolton & Chadwick, 901 Victoria Sq., Montreal, Que. terminal bldg., customs immigration bldgs., Gander International Airport. **$2,000,000.** CD 12/19/49.

PUBLIC BUILDINGS

▲ **Calif., Anaheim**—SCHOOLS—Anaheim High School District, Anaheim, voted **$3,015,000** bonds Junior High School and school addns. CD 2/9.

▲ **Calif., Los Angeles**—HALL OF RECORDS—Los Angeles Co., Hall of Records, plans by James R. Friend; Kress Bldg., Long Beach, Richard J. Neutra, 2300 Silver Lake Blvd., Los Angeles, Robert E. Alexander, 2379 Glendale Blvd., Los Angeles, Herman C. Light, 9061 Santa Monica Blvd., Los Angeles, and John Rex & Douglas Honnold, 306 N. Doheny Dr., Los Angeles, 294,800 sq. ft. Type I, Hall of Records Bldg. **$5,896,000.**

▲ **Calif., Orange**—SCHOOLS—Orange Unified School District, Orange, bond election June 14 for **$1,000,000**, elementary schools; **$950,000** for high schools. CD 2/2.

▲ **Calif., San Jose**—SCHOOL—Eastside Union High School Dist., North White Rd., high school **$1,985,000.**

▲ **Conn., Hartford**—SCHOOL—State, P. Wks. Comr., State Office Bldg., Hartford, technical high school to replace State Trade School on Charter Oak Terrace, **$4,000,000.**

▲ **Idaho, Twin Falls**—SCHOOLS—Twin Falls School District, voted bonds, 2 elementary schools and high school cafeteria and addn. **$1,163,000.** CD 3/8.

▲ **Ill., Belleville**—SCHOOL ADDNS.—Belleville Township High School Bd Educ., 2600 W. Main St., township high school addns., West Main St. **$2,158,000.**

▲ **Mich., Detroit**—GARAGE—City, Glenn C. Richards, comr. Dpt. P. Wks., City-County Bldg., plans by William H. O'Dell, 515 Hammond St., parking garage,

(Continued on page 71)

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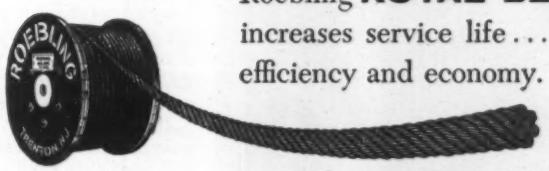

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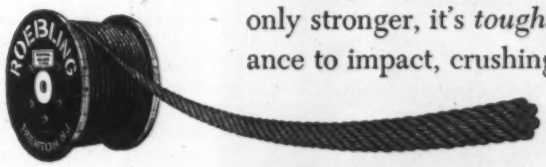

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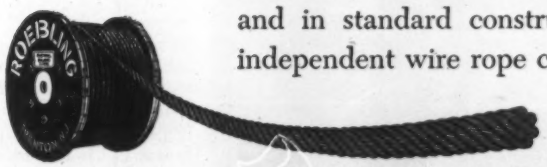

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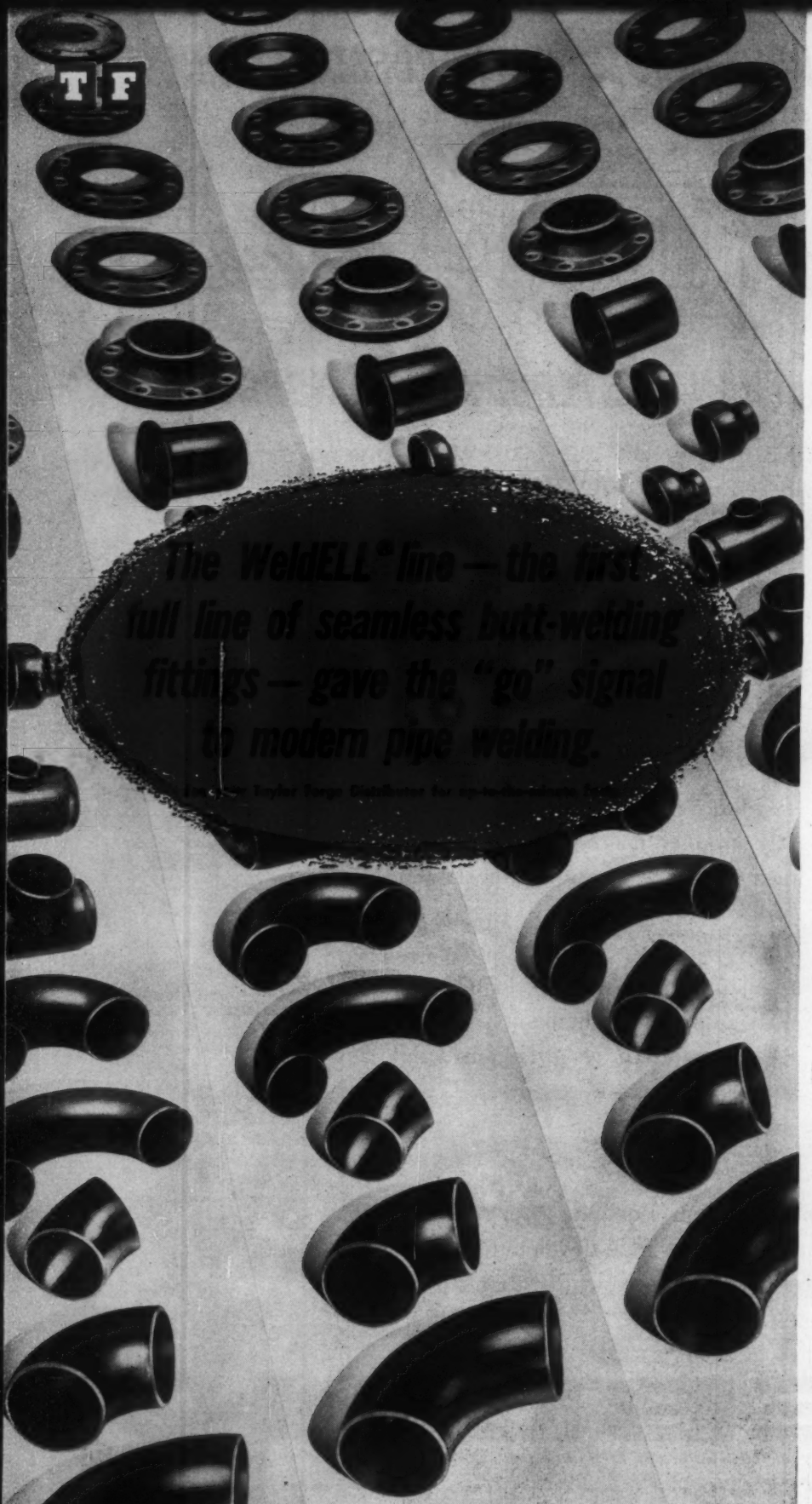

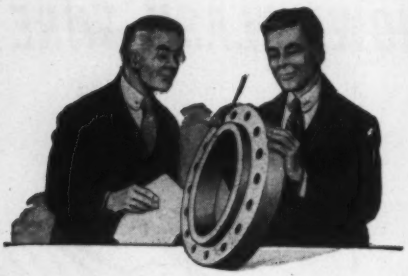

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In view of the obviously far greater strength of forged flanges, this was foolishly safe, and patently not at all in the "Uniformity of Strength" tradition. Moreover, in the twenties pressures were starting their upward climb. The 125 lb. and 150 lb. standard wouldn't do. Now it was 400; then 600; then 900 pounds. As the pioneer and leader in this field, Mr. Taylor saw the need for formulating standards and went to work on it.

Although one of the first studies conducted in this field, his work ranks to this day as one of the most thorough jobs ever done. In this work Mr. Taylor was in touch with Mr. Sabin Crocker, who is author of today's "Piping Handbook." He also collaborated with Professor E. O. Waters of Yale. Mr. Taylor ran exhaustive full scale tests on actual flanges to provide the test data which was then analyzed and formulated by Mr. Taylor and Professor Waters. The result was the Taylor-Waters Formula, presented before the ASME in 1927.

Still found in every engineering handbook, the Taylor-Waters formula was, and is, the basic means of determining flange stress under a given condition of loading. In the years since, Taylor Forge has also played a leading part in bringing standards into correlation with broadening needs . . . but this is *another* story.

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(Continued from page 68)

First and Abbott Sts. $1,328,000. Parsons, Brinckerhoff, Hall & MacDonald, 51 Broadway, New York, N. Y., consult. engrs. CD 12/3.

▲ **Mich., Ionia**—PRISON—State, A. N. Langius, dir. State Bldg. Dpt., Lewis Cass Bldg., Lansing, plans by J. & G. Daverman, 924 Grandville Ave., Grand Rapids, state prison plant, incl. brick, concrete 5 housing units, central dining hall, admin., chapel and athletic bldgs., recreation field, academic school and vocational shops. $7,000,000. CD 11/6/53.

▲ **Minn., New Brighton**—SCHOOL—Mounds View Independent School Dist. No. 38, Ramsey Co., R. R. Reeder, supt., voted $1,000,000 bonds Apr. 12, 2 grade schools, Ramsey County Road 1 and Quincy Ave., $600,000; and other east of Lake Johanna, $400,000. CD 4/7.

▲ **Mo., St. Louis**—HOSPITALS, INSTITUTIONS, etc.—City, Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, Zone 3, bond election May 26, addns., imprvs. to city hospitals and health centers, $7,507,000; addns., imprvs. to various city correctional and juvenile guidance institutions, $5,150,000; imprvs., addns. to Art Museum in Forest Park, $1,000,000, CD 2/21; expansion of public library branch facilities, $1,000,000; fire department bldgs., imprvs., equip., $2,165,000; warehouse to house voting machines, $175,000; factory-type bldg. and equip., $150,000; street cleaning and traffic control workshops bldg., $425,000.

▲ **N. J., Skillman**—PSYCHIATRIC, etc.—Dpt. Institutions & Agencies, State House, Trenton, Juvenile psychiatric unit, $2,000,000; employees housing $890,000, at N. J. Neuropsychiatric Institute. CD 3/2/53.

▲ **N. J., Toms River**—SCHOOL—Central Regional High School of Ocean Co., Toms River, voted $1,430,000 bonds, school in Berkeley Twp. CD 11/8.

▲ **O., Cincinnati**—MEDICAL SCHOOL—City, City Hall, plans by Kruckmeyer & Strong, Carew Tower, medical school addn. $1,013,000. Hixon-Tarter & Assoc., 2320 Victory Parkway, consult. engrs. CD 4/1.

▲ **O., St. Mary's**—POWER PLANT IMPRVS.—Village, E. N. Leonard, service dir., power plant imprvs. incl. 6,000 kw turbine and new boiler, $1,007,600.

▲ **Pa., Allison Park**—HIGH SCHOOL—School Dist. of Hampton Twp., R. D., Allison Park, plans by Celli Flynn, 335 Shaw Ave., McKeesport, Junior Senior High School addn., Hampton Twp. $1,000,000. CD 1/29/54.

▲ **Tex., Dallas**—HIGH SCHOOL—Dallas Independent School Dist., 3700 Ross St., plans by Fred Buford Assocs., Interurban Bldg., Senior High School, $2,600,000. CD 12/15.

▲† **Tex., Fort Sam Houston**—FACILITIES—U. S. Eng., Box 1229, Galveston, plans by Addis E. Noonan Assocs., 803 American Hospital & Life Insurance Bldg. and Jerry Rogers, Insurance Bldg., archts.-consult. engrs., design of facilities. $5,000,000. CD 9/16.

▲ **Wash., Spokane**—HIGH SCHOOL—School Bd., Dist. 81, Spokane, plans by Culler, Gale & Martell, Realty Bldg., high school, $2,925,000. CD 11/9.

▲ **Wis., Green Bay**—CITY HALL—City, City Hall, voted bonds city hall, $1,750,000. Foeller, Schober, Berners, Safford & Jahn, 310 Pine St., archts. CD 3/15.

▲ **Ont., London**—HOMES—Dpt. National Defence, Ottawa, 250 homes for defence personnel. $2,500,000. CD 3/18/53.

COMMERCIAL BUILDINGS

▲ **Calif., Belmont**—SHOPPING CENTER—Owner c/o E. H. Drotieff, 1150 Holly St., San Carlos, shopping center Alameda de Las Pulgas and Ralston Ave. $1,000,000.

▲ **Calif., Pinole**—HOMES—P. J. Fahey, 4538 Dam Rd., Richmond, 300 home subdivision. $3,000,000.

▲ **Calif., San Jose**—Y.M.C.A.—Young Men's Christian Assn., Second and Antonio Sts., Y.M.C.A. bldg., $1,257,000.

▲ **Mo., St. Louis**—APARTMENT—Urban Redevelopment Corp. of St. Louis, Russell E. Gardner, Jr., pres., c/o Reinholdt & Gardner, 400 Locust St. Zone 2, plans by Hellmuth, Yamasaki, Leinweber & Assoc., 825 Locust St., Zone 1, and Harris Armstrong, 200 S. Sappington, Kirkwood, Zone 22, three 26 story, bsmnt. apartments, in area bounded by Olive to Chestnut, 15 to 18 Sts., $20,000,000, Harland, Bartholomew & Assoc., 317 N. 11 St., Zone 1, consult. engrs. on parkways and landscaping. CD 4/17/51.

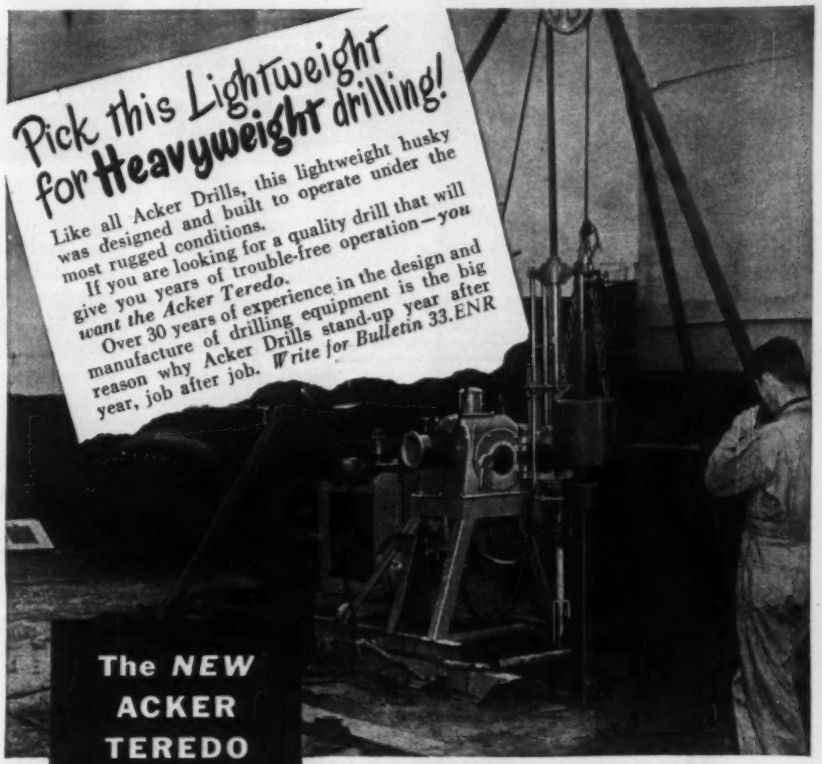
▲ **N. Y., New York**—BUILDING—Canada House, c/o Ray Lawson, Canadian Consul General, 620 Fifth Ave., Zone 20, bldg. to house all Canadian activities in New York, at 680 Fifth Ave., southwest corner of 54 St. $8,000,000-$10,000,000. CD 5/21.

▲ **O., Parma**—SHOPPING CENTER, etc.—Albert A. Levin, Natl. City Bank Bldg., Cleveland, plans by Weinberg & Teare, Citizens Bldg., Cleveland, 200,000 sq. ft. 40 unit shopping center, 60 unit 30,000 sq. ft. medical bldg., 2,000-car parking. $6,000,000.

▲ **Okla., Oklahoma City**—OFFICE, etc.—First National Bank & Trust Co., 120 N. Robinson St., plans by Sorey, Hill & Sorey, 809 N. W. 36 St., 12 story office bldg. and garage addn. to present bank bldg., Park and Robinson Sts. $3,000,000.

▲ **Tex., Houston**—MERCANTILE—Foley's, 1110 Main St., 4 story, approx. 238,500 sq. ft., masonry mercantile bldg. addn. $2,000,000. CD 2/18/47.

▲ **Tex., Houston**—SHOPPING CENTER—Northshore Village Corp., c/o Robert W. Clemens, archt., Box 12213, 138,736 sq. ft. masonry shopping center, $2,250,000.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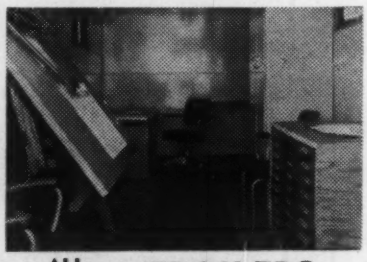

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▲ **Tex., Houston**—SHOPPING CENTER—Post Oak Center, Inc., c/o Kaban & Rudy, 905 Commerce St., shopping center, Westheimer and Post Oak Rds. $4,000,000.

▲ **Tex., Wichita Falls**—HOSPITAL—Bethania Hospital, 1600 11th St., and Wichita General Hospital, 8th and Brook Sts., plans by Harris & Killebrew, 1710 Dayton St., 16-bed addn. and convalescent to general hospital, and 5 story addn. to Bethania Hospital. $1,950,000. CD 11/15.

▲ **Wis., Milwaukee**—MOTEL, etc.—Elm Corp., c/o K. H. Read, 1324 W. Wisconsin Ave., plans by Grassold-Johnson & Assocs., 734 N. Jefferson St., motel, restaurant, office and parking lot, $1,000,000.

▲ **Wash., Seattle**—THEATER, etc.—Sterling Theaters, Co., 11514 Bothell Way, plans by R. R. Campbell, 518 1 Ave. N., Seattle, 119 houses, $2,500,000.

▲ **Wash., Seattle**—THEATER, etc.—Sterling Theaters, Inc., Palomar Bldg., Zone 1, plans by J. Graham & Co., 1426 5 Ave., theater and bowling alley, Pacific Hy. S. and Military Rd. $1,100,000.

▲ **Ont., Ottawa**—OFFICE—Maple Leaf Realty Co., 227 Laurier Ave. W., office bldg., 136-146 Stater St. $1,000,000.

▲ **Que., Montreal**—SHOPPING CENTER—Ninety-Five Investment Corp., 4060 St. Lawrence Blvd., shopping center, incl. 30 stores, 40,000 sq. ft. supermarket and 1,000 car parking lot, on Cote St. Luc Rd, $2,000,000.

INDUSTRIAL BUILDINGS

▲ **Ind., Lafayette**—PLANT EXPANSION—National Homes Corp., By Pass, Lafayette, plant expansion $2,000,000.

▲ **Iowa, Camanche**—STEEL MILL—North American Steel Co., Camanche, steel mill, $250,000,000, Koppers Co. Inc., Koppers Bldg., Pittsburgh, Pa., and Mesta Machine Co., West Homestead, Pittsburgh, Pa., consult. engrs. CD 2/9/51.

▲ **La., Norco**—PLANT—Shell Chemical Corp., Shell Bldg., Houston, Tex., hydrogen peroxide plant, $7,000,000; acrolein mfg. plant, $5,000,000; glycerine production plant, $10,000,000.

▲ **N. Y., Brooklyn**—PRINTING PLANT—Watch Tower Bible & Tract Society, 124 Columbia Heights, Zone 2, plans by Severud, Elstad & Krueger, 415 Lexington Ave., New York, Zone 17, 12 story printing plant, 73-93 Sand St. $1,500,000.

▲ **O., Canton**—PARKING—Canton Parking Corp., c/o City, City Hall, 2-ramp type parking bldgs., Cleveland Ave. N.W. between 2nd and 3rd Sts. $1,600,000.

▲ **Okla., Tulsa**—WAREHOUSE, etc.—Jones & Laughlin Steel Corp., Tri-State Bldg., 100,000 sq. ft. warehouse bldg. and headquarters, at Peoria and Frisco for J & L Co. $1,400,000. Rainey Elliott, c/o owner, 401 Liberty Ave., Pittsburgh, Pa., engr.

▲ **Pa., Blairsville**—TEST REACTOR PLANT—Westinghouse Electric Corp., 401 Liberty Ave., Pittsburgh, 1 and 2 story test reactor plant, Derry Twp. along Conamaugh River across from Blairsville. $6,500,000.

▲ **Tex., Brazoria**—PLANT—Standard Sulphur Co., Freeport, sulphur mining plant, $1,500,000.

▲ **Man., Pine Falls**—PAPER PLANT—Manitoba Paper Co. Ltd., 408 University Ave., Toronto, Ont. Modernization and extension to paper plant $6,000,000.

▲ **Ont., Cornwall**—PAPER MILL—Howard Smith Paper Mills Ltd., 407 McGill St., Montreal, Que., expanding paper mill, new finishing room, bleaching plant and other addns. $3,500,000. P. V. Palmer, c/o owner, ch. engr. CD 3/22.

UNCLASSIFIED

▲ **Ill., Skokie**—PARKS, etc.—Skokie Park & Recreation Dpt., 3701 Oakton St., plans by Howard T. Fisher, 322 W. Washington St., Chicago, Zone 6, 15 parks, 2 swimming pools and community center bldg. $1,570,000.

▲ **Mich., Romeo**—PROVING GROUNDS—Ford Motor Co., E. S. MacPherson, vice pres. in charge of Eng., 2866 Penobscot Bldg., Detroit, plans by Smith-Hinchman & Grylls, 800 Marquette Bldg., Detroit, Proving Grounds, 4,000 acre site, incl. bldgs., car testing tracks, fueling facilities, garages, test roads, etc. $5,000,000-$15,000,000. CD 7/27.

▲ **Mo., St. Louis**—DOCK, etc.—City, Frank J. McDevitt, pres. Bd. P. Service, 304 City Hal, Zone 3, bond election May 26, constr. 800 ft. dock, wharves, warehouses on Mississippi River adjacent to present municipal dock at foot of North Market St. $2,500,000. CD 8/2/49.

▲ **Mo., St. Louis**—STREET LIGHTING—City, Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, Zone 3, bond election May 26, street lighting imprvs., incl. modernization lighting on some 150 mi. main traffic arteries, $4,000,000; residential street lighting facilities, $2,000,000. CD 11/16.

▲ **Mo., St. Louis**—PARKS, etc.—City, Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, Zone 3, bond election May 26, development, imprv. parks and playgrounds in various parts of city, $11,000,000; constr., equipping planetarium, $1,000,000; addn., imprvs. at Zoo in Forest Park, $1,625,000.

▲† **Tex., Port Isabel**—TRAINING BASE—U. S. Eng., Box 1229, Galveston, reactivating of World War No. 2, Air Force base at Laguna Madre into base for gunnery training of jet fliers, incl. bldgs. for personnell housing, storage, underground utilities, hangars, classrooms $1,000,000.

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
BRIDGES
May 10 Massachusetts — May 13 Maine
STREETS AND ROADS
May 9 Connecticut — May 10 Massachusetts
May 13 Vermont

▲ MASSACHUSETTS—BA 5/19—Massachusetts Turnpike Auth., 80 Boylston St., Boston,
Chicopee—Contr. 51-192 hy. and bridge constr. $3,000,000. Plans deposit $10. Howard, Needles, Taumen & Bergendoff, 80 Boylston St., Boston, engrs. CD 8/11.

BIDS ASKED—BUILDINGS

▲† Mass., Boston—ARMY BASE—BA 5/13—U.S. Eng., 857 Commonwealth Ave., Boston, army base, rehabilitation, modernization, South Boston, ENG-19016-55-110, $10,000,000. Plans deposit $25, refundable. Fay, Spofford & Thorndike, 11 Beacon St., Boston, engrs. CD 4/12.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Bethlehem Steel Co., 75 Federal St., Boston, Mass. LB $3,591,265. structural steel John F. Fitzgerald Expressway, Boston. Bids Apr. 26. CD 3/29.

▲ MASSACHUSETTS—Massachusetts Turnpike Auth., 80 Boylston St., Boston,
Daniel O'Connell's Sons, Inc., 480 Hampden St., Holyoke, Mass. CA $2,714,415, est. $2,700,000. Contr. 51-040 Westfield River Bridge, Russell and Montgomery. CD 4/8, under LB.

▲ MASSACHUSETTS—Massachusetts Turnpike Auth., 80 Boylston St., Boston,
Clark Farrell Rogers Co., 410 Cotton Exchange Memphis, Tenn. CA $4,462,561, est. $4,400,000. Contr. 51-072 hy. and bridge constr., Sturbridge. CD 4/12, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ L & R Constr. of Medford, Inc., 36 Earl Ave., Medford, Mass. LB $1,541,888. Junior-Senior High SCHOOL, NORTH READING, MASS. Town, Junior-Senior High School Bldg. Comn., North Reading, Mass. Bids Apr. 22. CD 4/1.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
BRIDGES
May 19, 26 New York
STREETS AND ROADS
May 17 New Jersey — May 19 New York

▲ New York—BA 5/27—The Power Auth. of the State of New York, 270 Broadway, New York, Zone 7, channel imprvs., Galop Island South Channel, near Ogdensburg, St. Lawrence Co. Spec. No. PA-5-11019, St. Lawrence Contr. No. 15. Plans deposit $5. Uhl, Hall & Rich, 230 Congress St., Boston 10, Mass. CD 8/18.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ NEW YORK—Jones Beach State Parkway Auth., Admin. Headquarters, Belmont Lake State Park, Babylon,
Hendrickson Bros., Inc., 63 N. Central Ave., Valley Stream, N. Y., CA $2,133,425, Contr. 3A, grading, drainage, paving, grade separations for exten. of Meadowbrook State Park, East Gate Blvd. to Northern State Parkway, Nassau Co. Bids Apr. 12. CD 4/15.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Leon D. DeMatteis Constr. Co., 827 Elmont Rd., Elmont, N. Y., CA Est. $3,750,000. Dutch Broadway Junior-Senior HIGH SCHOOL, Elmont, NEW YORK. Sewanka Bd. Educ., Central High School Dist. 2, Tulip Ave., Elmont, N. Y. CD 6/17.

▲ George Hurlburt Builders, Inc., c/o MaBelle Robb, 397 Cleveland Dr., Buffalo, N. Y. Owner Builds. $1,800,000. 77 ranch HOMES, AMHERST, N. Y. Jack Kushin, 1487 Hertel Ave., Buffalo, N. Y., archt.

▲ Frank A. Yeager, Inc., 4845 Union Rd., Buffalo, N. Y. Owner Builds. $6,500,000. 600 ranch HOMES, incl. sewer lines, water facilities, paving, streets, along Geo Urban Blvd., east of Dick Rd., CHEEKTOWAGA, N. Y.

▲ H. K. Ferguson Co., 19 Rector St., New York 6, N. Y., CA Est. $4,000,000. 2 story DISTRIBUTION CENTER, 12-acre tract, SPRINGFIELD GARDENS, N. Y. Westinghouse Electric Co., 195 Broadway, New York 7, N. Y. CD 6/10.

▲ The McGraw Const. Co., Inc., 1st Natl. Bank Bldg., Middletown, O., CA Est. $25,000,000. STEEL MILL expansion, 56 in. hot strip mill, new annerline and pickling line, relocation of present wheel works, BUTLER, PA., Armco Steel Corp., 703 Curtis St., Middletown, O. CD 3/17.

▲ General Electric Co., River Rd., Schenectady, N. Y. CA 175,000 kw generator at Schuylkill GENERATING STATION, 28 and Christian Sts. PHILA., PA. Philadelphia Electric Co., 1000 Chestnut St., Phila. 5, Pa. CD 9/9.
Combustion Engineering, 200 Madison Ave., New York, N. Y., CA boiler (Phila. Generating Sta.)

▲ Perlmutter Bros., Inc., 4711 Coachway Drive, Randolph Hills, Md. Own Forces. $2,600,000. 200 detached HOMES on Old Bladensburg Rd. and Gable St., SILVER SPRING, MD. CD 1/18.

▲ John Tester & Son, Inc., 1620 2 St. S.W., Wash., D. C. LB, $1,518,450, three wings to present SEMINARY, WASH., D. C. Immaculata Seminary, 4344 Wisconsin Ave. N.W., Wash., D. C. Bids Apr. 24. CD 4/7.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
STREETS AND ROADS
May 11 Louisiana

BUILDINGS

LOW BIDS AND CONTRACTS

▲† H. L. Coble Constr. Co., 1705 Battle Ground Ave., Greensboro, N. C., LB $2,551,000, Item 2; LB $2,591,000, Item 4, imprv. mobilization type BARRACKS, ENG-31-001-55-129, FORT BRAGG, N. C. Contg. Office, Fort Bragg, N. C. Bids Apr. 18. CD 12/26/51.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
BRIDGES
May 25 Michigan

▲ Ill., Chicago—BA 5/20—City, City Hall, three sections of water tunnels and shafts connecting to Chicago Ave. water tunnel and Wilson Ave Water tunnel for Central District Filtration Plant, incl. Spec. 80.391-55-1, Section "A", four shafts in area 400 to 1800 ft. north of Navy Pier and from Lake Shore Dr. to point approx. 2,000 ft. east;

only the Littleford "Kwik-Steam" Vapor Generator gives you steam in 2 minutes from a cold start!

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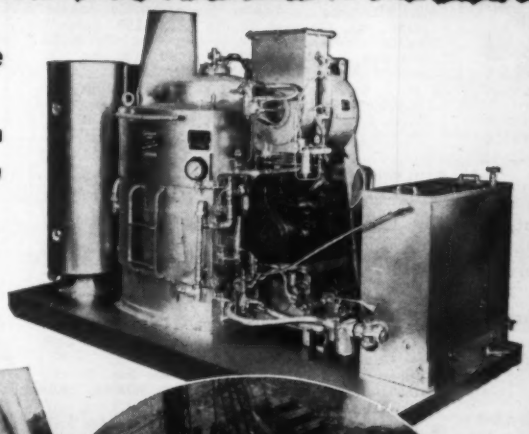

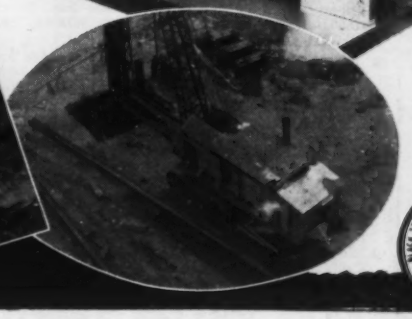

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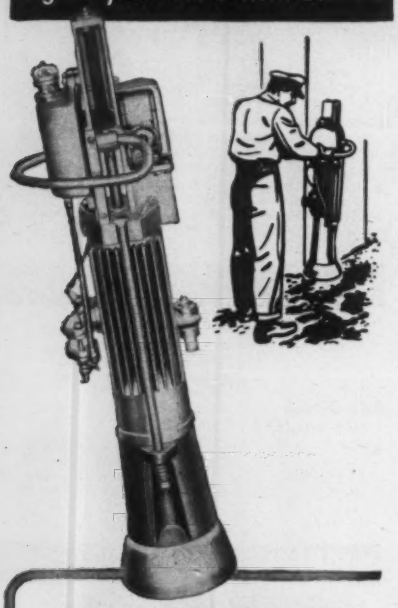

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Ask for Catalog 621

Spec. 80.391-55-2, Section "B" shaft in park area S. E. of Belmont Harbor on approx. line of Wellington Ave. extended, two lengths of 16 ft. tunnel in rock total length approx. 14,300 ft. one extending southeasterly to connection with Tunnel Section "A" and other extending Northwesterly to connect with Tunnel Section "C", Spec. 80.391-55-3, Section "C", two shafts in Park area south of Wilson Ave. and east of Clarendon Ave. two 16 ft. tunnels in rock, with total length approx. 4,700 ft.; one tunnel in rock, one tunnel in clay 1 by-pass structure. Plans deposit $50 for each section. $14,993,060; adv. ENR 5/5. CD 8/24/53, under LB.

▲ **INDIANA**—BA 5/25—Indiana Toll Road Comn., 309 W. Washington St., Indianapolis, Zone 4 toll plazas and lighting in Steuben, La Grange and Elkart Counties, $1,800,000. J. E. Greiner Co., Williams and LaSalle Sts., South Bend, Ind., consult. engrs. Ed. D. James and Clyde E. Williams & Assocs. 118 Franklin St., Elkart, Ind., design engr. (Correction-engineer, bid date and cost). CD 4/6.

▲ **INDIANA**—6/1—Indiana Toll Road Comn., 309 W. Washington St., Indianapolis, Zone 4, 10 service bldgs., Porter, LaPorte, Elkart, LaGrange and Steuben Counties. $6,500,000. Charles W. Cole & Son, 220 W. LaSalle St., South Bend, consult. engrs. (Correction-bid date). CD 4/6.

▲ **INDIANA**—BA 7/27—Indiana Toll Road Comn. 309 W. Washington St., Indianapolis, Zone 4, toll plazas and lighting near South Bend, LaPorte, Michigan City, Valparaiso, Gary, Hammond and interchange plazas at State Rd. 39 and U.S Rd. 421 in the LaPorte area, $2,200,000. J. E. Greiner Co., Williams and LaSalle Sts., South Bend, and Edward D. James and Clyde E. Williams & Assoc. 118 E. Franklin St., Elkart, engrs. (Correction-engineers and cost). CD 4/6.

BIDS ASKED—BUILDINGS

▲ **Ill., Western Springs**—SCHOOL—BA 5/10—School District 204, Western Springs, 1 and 2 story Lyons Twp. High School. $4,000,000. Perkins & Will, 309 W. Jackson Blvd., Chicago, Zone 6, archts. CD 12/30.

▲ **Mich., Birmingham**—SCHOOL—BA 5/19—City, Ames F. Gregory, secy. Bd. Educ., Martin St., Junior High School. $2,000,000. Plans deposit $50, refundable. Eberle M. Smith Assoc., 153 E. Elizabeth St., Detroit, archts. Bids 3/30 rejected. CD 3/11.

▲ **Mich., Royal Oak**—SCHOOL—BA About 6/14—City Gladys Holmes, clk., high school, $4,000,000, O'Dell, Hewlett & Luckenbach, 950 N. Hunter Blvd., Birmingham, archts. CD 3/21.

SOON LETS CONTRACT—HEAVY CONSTRUCTION

▲ **Ill., Chicago** — TELEVISION STUDIO — Columbia Broadcasting Co., McClurg and Erie Sts., soon lets contract, conversion former riding stable and skating rink to television studio, $3,000,000. DeLeuw, Cather Co., engr., and Andrew Rebore, archt., both 150 N. Wacker Dr., Chicago 6, Ill. CD 10/20.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **INDIANA**—Indiana Toll Road Comn., 309 W. Washington St., Indianapolis, Zone 4, **Winkleman Constr. Co. & A. L. Dogherty,** 403 Guaranty Bldg., Indianapolis, Ind., LB **$6,762,531.** Contracts 1 and 2, Indiana East-West Toll Rd., Lake Co. Bids Apr. 20. (Correction-low bidder) CD 4/27, under LB.

▲ **INDIANA**—Indiana Toll Road Comn., 309 W. Washington St., Indianapolis, Zone 4, **Peter Kiewit Co. & Condon Cunningham Co.,** 15806 Lorain Ave., Cleveland, O., CA **$5,209,159.** Contract No. 6, dual highway and bridges, East Chicago to Hammond, Indiana-East-West Toll Rd. Bids Apr. 13, awarded Apr. 22. CD 4/20, under LB.

▲ **M. J. Boyle Co.,** 2480 Elston St., Chicago, Ill., LB **$2,229,492,** Wrightwood auxiliary storm sewer, CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Apr. 18. CD 3/31.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **S. N. Nielsen Co.,** 3059 August Blvd., Chicago, Ill., CA, **$20,000,000.** SHOPPING CENTER, HILLSIDE, ILL. Hillside Shopping Centre, Wolf Rd. and Congress Highway, Hillside, Ill. Awarded Apr. 19. CD 11/30.

▲ **Alexander & Kingbay,** 4641 Hiawatha Ave., Minneapolis, Minn., CA, **$3,000,000,** 180,000 sq. ft. SHOPPING CENTER, incl. 60,000 sq. ft. department store, ROCKFORD, ILL. Rockford Plaza Shopping Center, c/o S. H. Morris & Assocs., archts., 134 N. La Salle St., Chicago, Ill.

▲ **Albert Sherman & Assocs.,** 3034 Devon Ave., Chicago, Ill. Own Forces. **$1,500,000.** 60 HOMES, SKOKIE, ILL.

▲ **Reliance Bldg. Corp.,** 762 Madison St., Forest Park, Ill. Own Forces. **$8,000,000.** 450 HOMES, WESTCHESTER, ILL. Robt. P. Johnstone, 1033 South Blvd., Oak Park, Ill., archt.

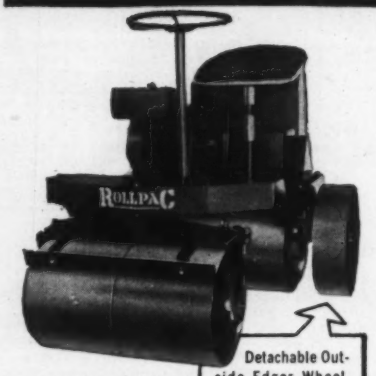
▲ **Flecker-Labeau, Inc.,** 23520 Michigan Ave., Dearborn, Mich. CA Est. **$3,000,000.** 250 brick ranch HOUSES Annapolis and Telegraph Rds., DEARBORN, MICH. Brokers Realty Service, 23520 Michigan Ave., Dearborn, Mich.

▲ **Biltmore Building Co.,** 17615 James Couzens St., Detroit 35, Mich. Owner Builds. **$4,000,000.** 400 brick frame HOMES, GARDEN CITY, MICH.

▲ **C. Schuett Realty, Inc.,** 19228 W. McNichols St., Detroit, Mich. Owner Builds **$1,500,000.** Lakewood Village, 100 or more HOUSES M-59 and Elizabeth Lake Rd., PONTIAC, MICH.

(Continued on page 76)

SOIL-AIRE
ROLLPAC
Ruggedly built for heavy-duty service



Detachable Outside Edger Wheel. Rolls flush with curb or wall.

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A Standout Popular-Priced One Ton Roller. Send for Catalog.

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Stone cold facts from the
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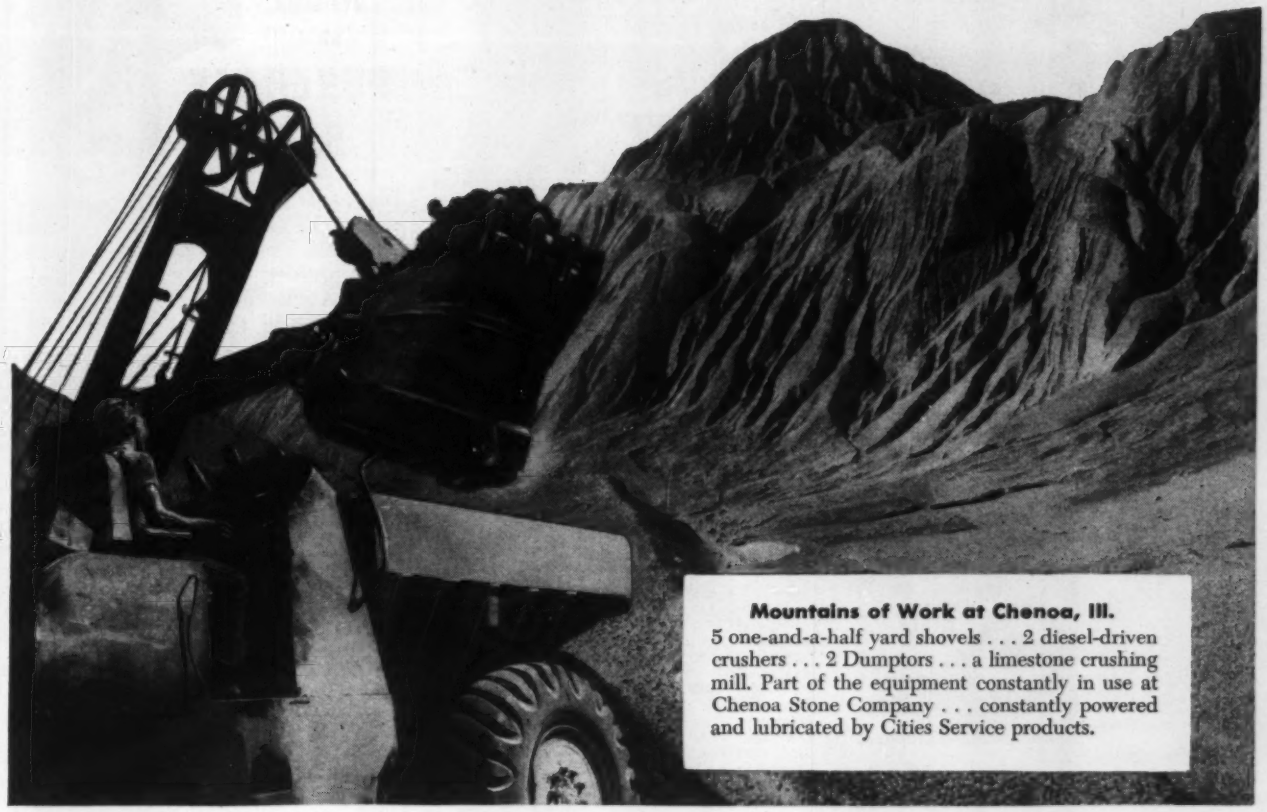

Mountains of Work at Chenoa, Ill.
5 one-and-a-half yard shovels . . . 2 diesel-driven crushers . . . 2 Dumptors . . . a limestone crushing mill. Part of the equipment constantly in use at Chenoa Stone Company . . . constantly powered and lubricated by Cities Service products.

Here's the story in the words of David D. Vickrey, Superintendent of Chenoa Stone Company:

"About two years ago, we switched from another nationally prominent brand oil to Cities Service C-300 Series Motor Oil. The results have been amazing.

"C-300's detergent action completely eliminated a bothersome sludge problem. On our first three oil changes with it, we removed 5 gallons of sludge from each of our 200 horsepower diesels. Since then, these diesels have remained clean, and today, when we open the crankcase, we can even see the paint.

"We also are using far less oil between changes. In fact Cities Service C-300 actually cut make-up oil from 5 to 6 gallons every 150 hours to less than one gallon every 150 hours!

"In addition to C-300 oil, we use Cities Service Lubricants for every requirement... Diesel Fuel, Gasolenes, Trojan M Grease and hydraulic fluid. We have been completely satisfied with every product.

"Cities Service has given us top-notch service, the best we've ever had. We are better supplied than ever and have learned to rely on Cities Service dependability."

There is nothing Cities Service could possibly add to Mr. Vickrey's statement, except a reminder to contact your local Cities Service representative in order that you may enjoy similar results in *your* operation. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

(Continued from page 74)

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

May 12 Kansas — May 13 Minnesota

May 17 Texas

STREETS AND ROADS

May 12 Kansas — May 13 Minnesota

May 17, 18 Texas

BIDS ASKED—BUILDINGS

▲† Mo., St. Louis—PLANT—BA 5/25—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., modification of Bldg. 205 Part I St. Louis Ordnance Plant, $4,000,000. CD 4/26.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Cities Service Gas Co.**, 1st Natl Bldg., Oklahoma City, Okla., Purchase and Hire. $4,500,000, 93 mi. 26 in. gas line from Blackwell, Okla. to Independence, Kan. $4,000,000, 145 mi. gas gathering lines in Woods Co., Okla. and Barber Co., Kan., OKLAHOMA and KANSAS. CD 1/8/52.

▲† **Shaw-Estes & Co.**, 1407 S. Akard St., Dallas, Tex., LB $1,988,178, est. $2,100,600, jet engine test shop, ENG-34-066-55-86, OKLAHOMA CITY, OKLA. U. S. Eng., Box 61 Tulsa, Okla. CD 9/16.

▲† **J. J. Fritch**, 6834 Harry Hines Blvd., Dallas, Tex. LB $1,520,421, est. $1,000,000. four 3 story, 25,000 sq. ft. concrete, brick veneer dormitories; two 10,000 sq. ft. dining halls, Altus Air Force Base, Inv. No. ENG-34-066-55-76, ALTUS, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids Apr. 20. CD 3/24.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Midwest Piping Co.**, 1450 S. 2 St., St. Louis, Mo. CA Est. $5,000,000. mechanical construction services for new facility at nearby Weldon Springs Ordnance Works site and expansion of existing AEC facilities at Mallinckrodt Chemical Works, WELDON SPRINGS and ST. LOUIS, MO. Fruin-Colnon Contg. Co., 1706 Olive St., St. Louis, Mo. and Utah Constr. Co., 100 Bush St., San Francisco, Calif. (joint venture) prime consrtuction contractor for Atomic Energy Commission, Oak Ridge, Tenn. CD 12/29, under CA.
Guarantee Electric Co., 4161 Gravois St., St. Louis, Mo. and **Newbery Electric Co.**, 1038 Venice St., Los Angeles, Calif. Est. $1,000,000 (joint venture) electrical construction services (MO-AEC).

▲ **Preston Constr. Co. (Div. Safeway Stores, Inc.)** 575 Mission St., San Francisco 5, Calif., CA Est. $5,000,000 MFG. PLANT, PROCESSING PLANT, 72 and J Sts., OMAHA, NEB. Safeway Stores, Inc., 4 and Jackson Sts., Oakland, Calif. Baxter Warehouse Service Div. of Safeway Stores, Inc., 4 and Jackson Sts., Oakland, Calif., engr.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

May 25 California

STREETS AND ROADS

May 17 Idaho — May 18, 25, 26 California

May 19 Nevada

▲ Wash., Tacoma—BA 5/27—City, City Hall, concrete arch dam with gravity wings, thrust blocks, 185 ft. high, 850 ft. long and with 205 ft. spillway, power house, 2 tunnels, etc., Cowlitz River for power, Mayfield, $45,000,000. Plans deposit $40.

BIDS ASKED—BUILDINGS

▲ Ore., Parkrose—FACTORY, etc.—BA 5/17—Owens-Illinois Glass Co., 601 36 Ave., Oakland, Calif., glass factory and warehouse. $1,600,000.

CANADA

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Principal Investments Ltd.**, 133 Richmond St. W. Toronto, Ont., Owner Builds, $2,000,000. "Capital Court" SHOPPING CENTER, incl. 40 stores, and parking area for 3,500 cars, Carling and Woodroff Aves., OTTAWA, ONT.

LATIN AMERICA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Thompson-Cornwall, Inc.**, Chrysler Bldg., 405 Lexington Ave., New York 17, N. Y. CA $6,000,000. paving the Cochabamba-Santa Cruz-Montero Hy., BOLIVIA. Bolivian Development Corp., c/o Government, LaPaz, Bolivia. CD 4/19.

(Proposal Advertisement see pp. 85 to 90)

COMBAT CORROSION!

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TAPECOAT is a coal tar coating with a tar-saturated close-woven fabric as a carrier for speed of application. The coal tar is self-bonding and requires no foreign adhesives.

Because coal tar is nature's own protection against corrosion, TAPECOAT resists moisture, acids, alkalis, soil stress, electrolysis, chemical fumes, fly ash, salt water, salt-laden air, barnacles, and other severe corrosive and abrasive conditions, above and below ground.

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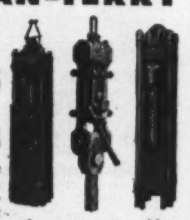

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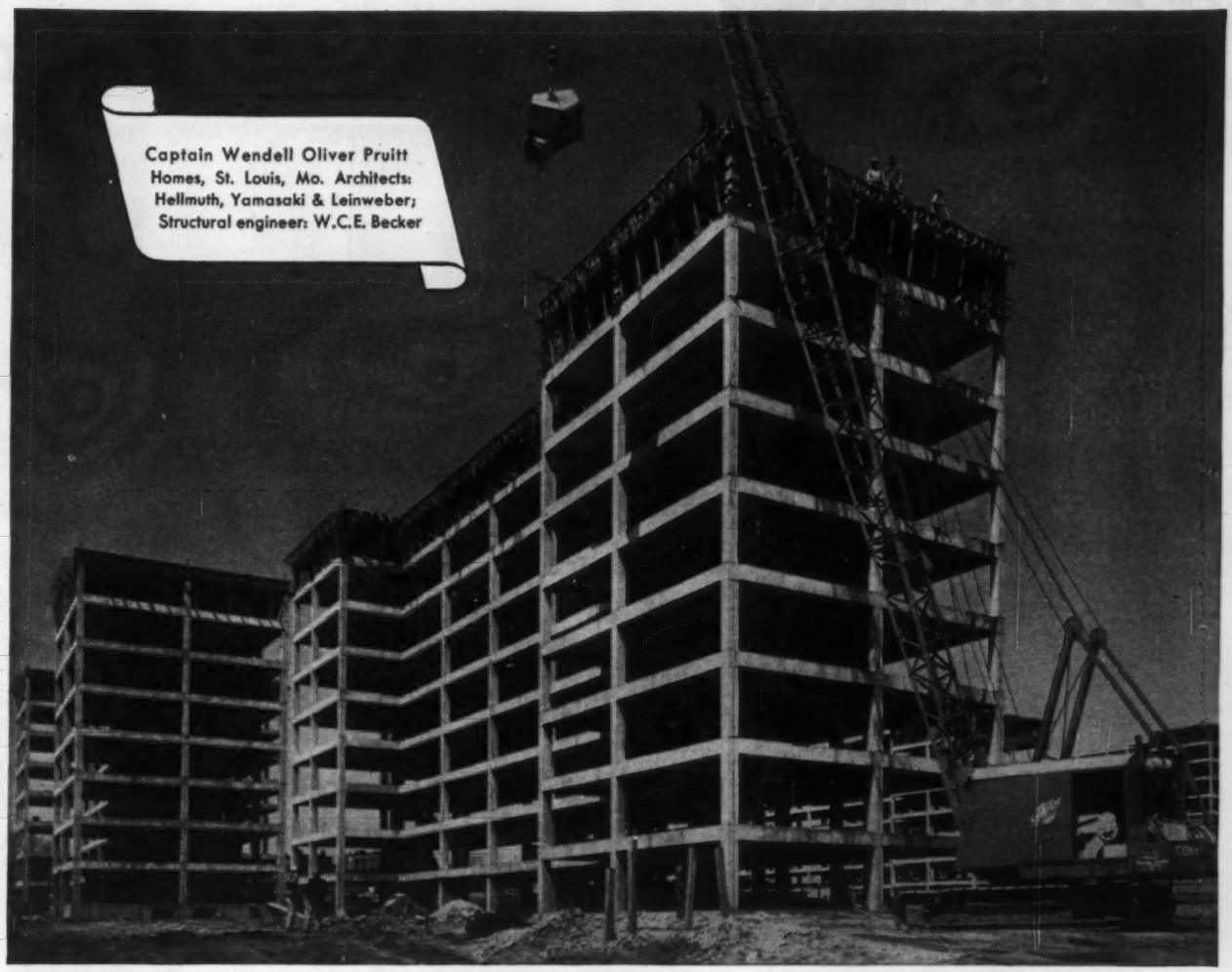
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Hellmuth, Yamasaki & Leinweber;
Structural engineer: W.C.E. Becker

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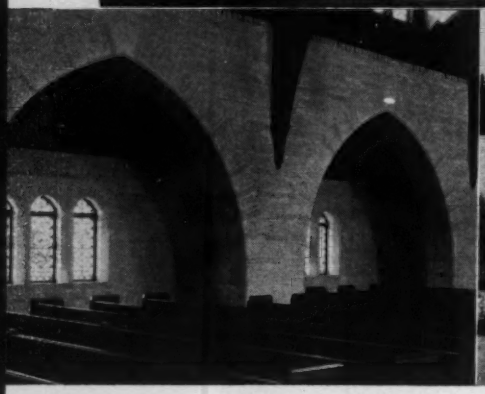

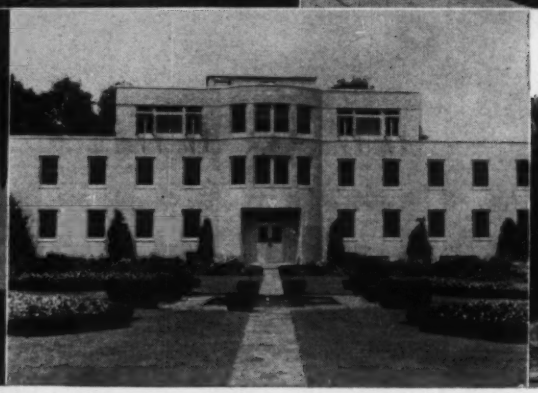

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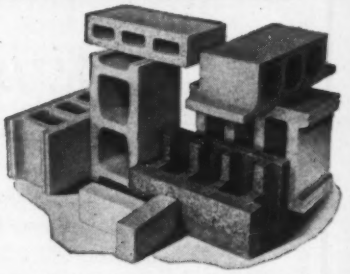

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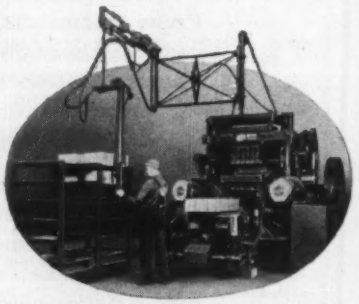

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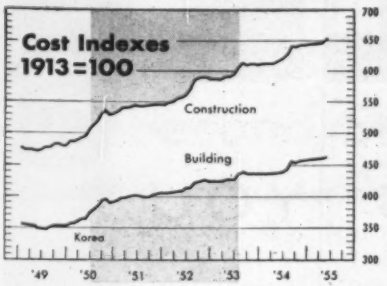
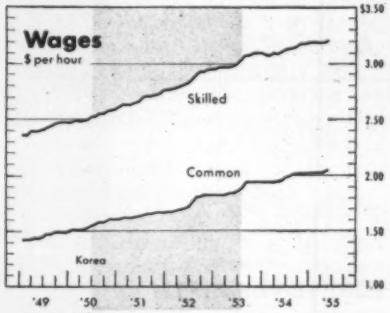
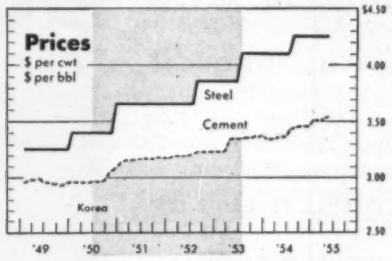
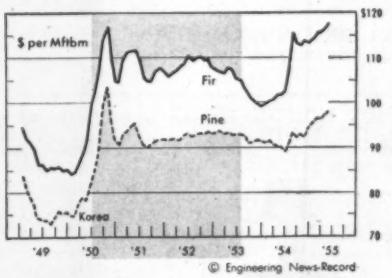








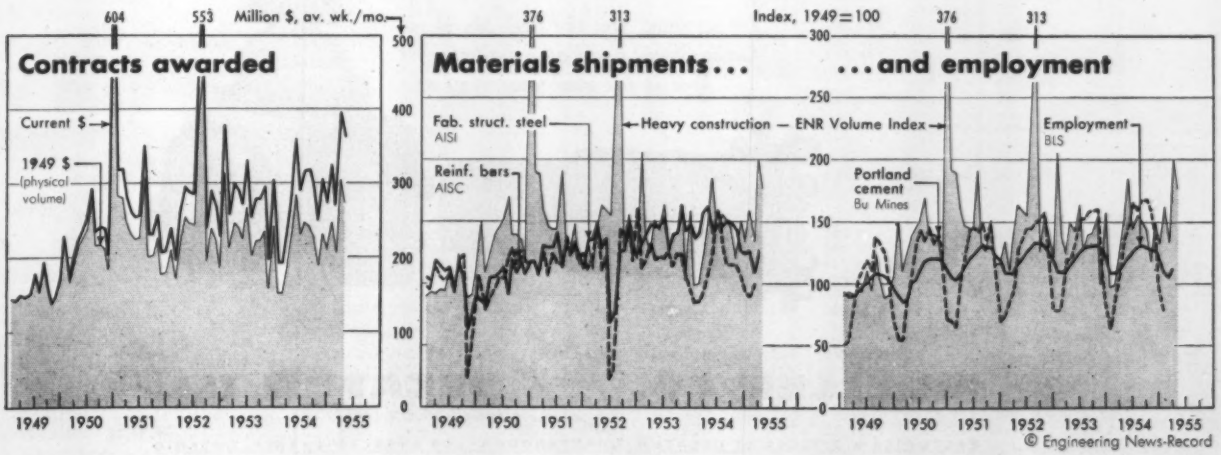
ENR INDEXES (1913=100), 20-cities' average	1955 May	% Change from last Month	% Change from last Year
Construction Cost	653.26	+0.9	+ 5.6
Building Cost	462.55	+0.4	+ 5.5
WAGE RATES, 20-cities' average			
Common	$2.050	+1.2	+ 4.3
Skilled (aver. 3 trades)	3.207	+0.5	+ 3.2
Bricklayers	3.474	+0.5	+ 2.7
Structural Ironworkers	3.185	+0.4	+ 3.7
Carpenters	2.963	+0.7	+ 3.1
MATERIAL PRICES, 20-cities' average			
Cement, bulk, per bbl	$3.551	+0.3	+ 5.4
Structural Steel, (3-mill aver.), per cwt	4.250	0.0	+ 3.7
Sand, per ton	2.322	+0.2	+ 4.0
Lumber, 2x4 Fir, per M. ft. bm	117.763	+0.8	+15.7
Lumber, 2x4 Pine, per M. ft. bm	98.000	+0.6	+ 8.7
Common brick, per M	33.668	+0.8	+ 1.6
Ready-mixed concrete, per c. y	12.416	+0.3	+ 3.2
Structural Clay Tile, 3x12x12 per M	160.600	+0.04	+ 0.08

CONTRACTS AWARDED (Millions)	1955 April (4-Wks.)#	4-Mos.	% Change from '54 (5-Wks.)#	4-Mos.
Total U. S. (ENR reported)	$1449.0	$5816.1	+25.8	+48.9
Private	831.9	3652.1	+19.2	+65.3
Public	617.1	2164.0	+36.1	+27.5
Federal	127.9	551.1	+56.9	+78.6
ENR Volume Index, '13=100	609	580	+17.8	+42.5
NEW CAPITAL (Millions)				
Total	493.4	2323.4	−45.9	−15.7
State & Municipal Bond Sales	272.9	1337.6	−54.2	−20.3
Corporate Security Sales	195.1	958.4	−24.7	− 7.4
Federal (non-federal work)	5.4	27.4	−63.2	−36.4
Federal (federal work)	.....	.....	.....	.....

Computed on weekly average.

MATERIAL SHIPMENTS & LABOR SUPPLIES (millions)	1955 Jan. (J) Feb. (F) Mar. (M)	12-Mos. 2-Mos. 3-Mos.	% Change from Mo.	Yr.-Cum.
Cement, bbls. Bu. of Mines	13.341(J)	274.096(12)	+19.7(1)	+ 5.1(12)
Fabr. Struc. Steel, tons AISC	.228(M)	.667(3)	−20.0(3)	−14.9(3)
Lumber, mil. ft. bm., NLMA	2.912(F)	5.765(2)	+ 3.7(2)	+ 6.5(2)
Lumber Prod., mil. ft. bm., NLMA	2.881(F)	5.711(2)	− 0.7(2)	+ 1.1(2)
Contract Const. Employ., BLS	2.398(M)	2.342(3)†	− 0.7(3)	− 1.3(3)

† Average.



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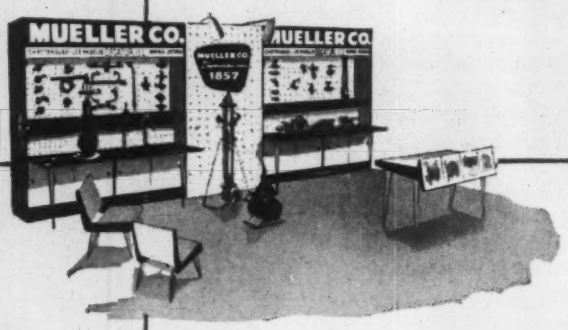

TO VISIT BOOTHS 86, 87 AND 88 AT THE SEVENTY-FIFTH ANNUAL CONVENTION OF THE AMERICAN WATER WORKS ASSOCIATION — JUNE 12TH. THROUGH JUNE 17TH.

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Awards Set Record in April, For Second Straight Month

Volume for first four months is 12% above previous record, and 49% ahead of last year's figure for the same period

The construction business is booming as never before. Contract awards reported to ENR in April totaled $1,449 million. It was the best April on record, up 26% from a year ago and 23% above the previous April high in 1953 (based on average weekly volume). April was the second consecutive month that awards reached an all-time high for the month.

That helps to explain why the first four months of this year have set a new record of $5.8 billion. This is 12% above the previous record for this period set in 1953, and 49% above last year.

Private construction, up 65% over 1954, is also at a new high for this period. So is state and local work, which is up 16%. Though federal work is up 79% over last year's low level, it is still well below the record 1951 volume. But federal contracts are higher than they have been for the first four months in any year since 1952.

• **Private work**—There were marked shifts in private construction last month. Industrial building scored the biggest month since December 1953. It averaged $65 million per week—nearly double the March weekly average. But housing and commercial building contracts declined.

• **Public works**—Sparked by highways, public works contracts rolled at a faster pace in April, as spring opened up the construction season. State and municipal contracts were the highest on record for April. The $122-million weekly average was 32% more than last year and about 7% above the previous April high in 1953. Federal awards increased slightly over March, and were a thumping 57% higher than the low level of April 1954.

Highway contracts averaged $46 million a week in April, just under the record level in 1953 but 5% above April 1954. So far this year, highway volume is far ahead of the 1953 Record; and it's 28% above this period last year.

There were sharp increases in April in earthwork & waterways, and in public housing. Smaller increases came in sewerage and bridges. Public buildings other than housing and waterworks were the only types that declined below the March level.

• **Regions**—All regions are now well ahead of last year, though several of them are not as far ahead percentage-wise as they were at the end of the first quarter. The Far West is now in the lead (up 67%), with the Middle Atlantic and West-of-Mississippi regions not far behind. The Midwest is 43% ahead of last year, while the South and New England are both about 20% ahead.

New Wage Settlements Cause Faster Rise in Cost Indexes

The gradual uptrend in construction costs in 1955 picked up speed this month. Construction unions settled on new contracts effective May 1 in five of the 20 cities covered by the ENR Cost Indexes. There were increases in four of them, ranging from 7½ cents to 20 cents per hour.

These wage increases, along with lumber hikes in eight cities and a boost in cement prices in one city, raised ENR's Construction Cost Index 0.9% this month to a new high of 653.26, based on 1913 = 100. The Building Cost Index for May is up 0.4% over last month at 462.55, also based on 1913. For the Construction Cost Index, the gain so far this year is 1.6%, compared to 1.2% last year. For the Building Cost Index, the gain is 1.3%, compared to 0.6% last year.

(*B&F continued on page 82*)

ENGINEERING CONSTRUCTION CONTRACTS—APRIL 1955

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $44,000; *other public works,* $73,000; *industrial buildings,* $93,000; *other buildings,* $344,000

Four Weeks—Thousands of Dollars (000 Omitted)

	April, 1955							U. S. Cumulative Four Months		% Change	Canada April
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1955	1954	'54 to '55	1955
Public Works											
Waterworks	1,092	1,450	359	4,387	5,331	2,680	**15,299**	**84,685**	64,769	+31	1,964
Sewerage	1,384	5,326	3,274	9,327	8,068	7,445	**34,824**	**130,095**	107,471	+21	2,723
Bridges	916	6,896	4,947	6,664	11,121	7,172	**37,716**	**151,217**	129,578	+17	691
Earthwork and drainage	360	31,330	4,438	1,165	5,585	8,876	**51,754**	**141,848**	90,006	+58	1,875
Streets and roads	27,132	18,676	23,796	38,206	55,965	20,586	**184,361**	**617,771**	481,949	+28	2,733
Public buildings, residential	562	32,001	1,704	.....	2,335	2,521	**39,123**	**84,731**	61,451	+38	1,474
Other public buildings	9,161	24,393	22,538	27,127	17,471	21,928	**122,618**	**548,822**	521,412	+ 5	7,817
Unclassified	10,961	36,551	14,923	6,001	39,179	23,845	**131,460**	**404,804**	240,051	+69	2,231
Total public	**51,568**	**156,623**	**75,979**	**92,877**	**145,055**	**95,053**	**617,155**	**2,163,973**	**1,696,687**	**+28**	**21,508**
Federal government (included in above classifications)	10,960	8,959	28,847	7,599	42,118	29,443	**127,926**	**551,114**	308,643	+79	551,114
Private											
Bridges	.....	.....	.....	.....	.....	.....	.....	**1,500**	110	+1264	.....
Industrial buildings	4,375	46,728	121,776	50,631	31,409	5,124	**260,043**	**778,379**	520,266	+50	20,069
Mass housing	11,015	172,259	14,448	88,630	73,225	38,475	**398,052**	**2,145,253**	1,228,237	+75	44,168
Commercial buildings	1,550	29,434	2,483	40,408	36,258	3,738	**113,871**	**516,542**	382,694	+35	6,194
Unclassified	100	776	2,291	3,388	18,371	35,000	**59,926**	**210,425**	78,005	+170	7,324
Total private	**17,040**	**249,197**	**140,998**	**183,057**	**159,263**	**82,337**	**831,892**	**3,652,099**	**2,209,312**	**+65**	**77,755**
Total Engineering Construction:											
April, 1955—4 weeks	**68,608**	**405,820**	**216,977**	**275,934**	**304,318**	**177,390**	**1,449,047**	.....	.....	.....	**99,263**
March, 1955—5 weeks	95,123	627,022	232,069	504,415	381,573	146,639	**1,986,841**	.....	.....	.....	149,719
April, 1954—5 weeks	126,122	399,105	168,015	325,607	303,233	117,359	**1,439,441**	.....	.....	.....	110,000
Four Months—1955	**282,371**	**1,744,328**	**673,111**	**1,234,971**	**1,253,401**	**627,890**	.....	**5,816,072**	.....	**+49**	**485,339**
Four Months—1954	236,980	1,077,363	559,625	863,452	792,063	376,516	.....	.....	3,905,999	.....	335,681
% Change '54 to '55	+19	+62	+20	+43	+58	+67	.....	.....	.....	.....	+45

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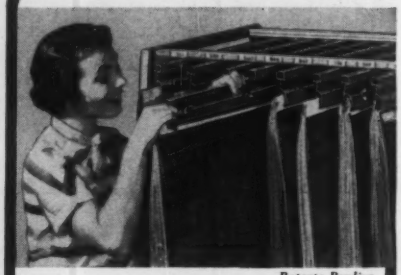

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BUSINESS AND FINANCE

FHA and VA to Crack Down On Closing Cost Concessions

The Federal Housing Administration and the Veterans Administration have stopped insuring mortgages where the home buyer does not have to put up closing costs.

VA mortgages where closing costs were included in the mortgage have been described as "no-no" down payment mortgages. FHA requires at least a 5% down payment on mortgages, but has allowed closing costs to be added to the mortgage. Closing costs cover such things as title search, appraisal charges, and prepaid taxes, and they can total up to a sizable amount.

Thomas J. Sweeney, Assistant Deputy FHA Administrator, told the House Veterans Affairs Committee last week that "no-no" down payment paper accounted for only about 1½% of VA guarantees last year. He said such loans have been used mainly in Florida, Texas, California, Long Island, and Baltimore, but that the practice has been spreading.

Both VA and FHA emphasize that they have no further restrictions on home mortgages at this time that would be applied on a national scale. There could be local restrictions, however, like the recent freeze on advance commitments that was applied by FHA's Dallas office.

FHA could also boost down payments, shorten the present 30-year maximum maturity, and even boost the interest rate of 5% from the present 4½%. A Presidential order could boost the rate to 6%.

Ford to Spend $625 Million

Ford Motor Co. plans to spend $625 million over the next three years on plants and equipment. That will bring Ford's total capital spending since 1946 to over $2.3 billion. Part of the money will go into production facilities for at least one and possibly two new lines of cars the company plans to introduce.

Correction

The statement on page 114 of the May 5 issue of ENR that Dragon Cement Co., Inc., is a subsidiary of U. S. Steel Corp. is incorrect. Actually, Dragon Cement is an independent producer, with present annual capacity of 3.8 million bbl. Its executive office is located in New York. U. S. Steel's cement-producing subsidiary is Universal Atlas Cement Co., also of New York.

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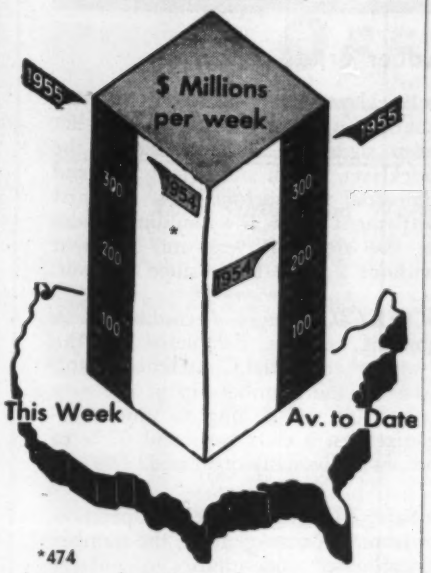
Activity This Week

As reported to ENR
(in millions of dollars)



*474

Amount of contracts let

	This Week	Cumulative 18 wks 1955	1954	% chge
Federal	$35.5	$586.6	$336.2	+74
State and municipal	106.8	1,719.7	1,492.3	+15
Total public	142.3	2,306.3	1,828.5	+26
Total private	247.1	3,899.1	2,551.4	+53
U. S. Total	$389.4	$6,205.4	$4,379.9	+42

Contracts by type of work

Waterworks	$4.2	$88.8	$69.6	+28
Sewerage	7.2	137.4	131.5	+4
Bridges	10.8	163.6	132.9	+23
Highways	53.4	671.0	522.6	+28
Earthwork, waterways	5.9	147.6	95.8	+54
Buildings:				
Public, excl. hsg.	29.3	578.0	549.8	+5
Housg., public	5.2	89.9	63.9	+41
Housg., private	109.4	2,254.7	1,455.4	+55
Commercial	45.4	562.1	418.6	+34
Industrial	80.1	858.5	573.3	+50
Unclassified	38.5	653.8	366.5	+78
Total	$389.4	$6,205.4	$4,379.9	+42

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

New capital for construction

(millions of dollars)

	Week of Apr. 25 1955	Cumulative 17 wks 1955	% chge '54-'55
Corporate securities	$33.0	$958.4	—7
State and municipal:			
All except housing	69.2	1,291.5	—21
Housing	0.1	46.2	+8
Federal loans	1.3	27.4	—36
Federal aid	...	...	...
Total non-federal	$103.6	$2,323.4	—16
Federal appropriations:			
In U. S.	...	...	...
Outside U. S.	...	...	...
Total new capital	$103.6	$2,323.4	—16

ENR cost and volume indexes, 1955

		Base years = 100 1913	1926	1949
Construction cost	4/28†	653.26	314.02	136.95
	3/31/	647.49	311.25	135.74
Building cost	4/28†	462.55	250.04	131.48
	3/31†	460.62	249.00	130.94
Volume	Apr.	609	248	176
	Mar.	691	281	200

† Official monthly indexes for Apr. & May

1-cu. yd. Sauerman Slackline Cableway began operations in 1921.

Company expanded output with this 2-cu. yd. Sauerman Slackline Cableway in 1948.

Minnesota Gravel Producer Gives the Facts on Recovery with Slackline Cableway

Guaranteed Gravel and Sand Co.'s 2-cu. yd. Sauerman Slackline Cableway, installed in 1948, replaced a similar unit of 1-cu. yd. capacity. Combined service of these two machines adds up to over 33 years company experience in the mechanics and economics of underwater recovery with Sauerman Slackline equipment.

Management of the Minnesota operation believes that a slackline has many definite advantages where the inhaul is long and the material is below water. Faster than other types of equipment, the company capitalizes on the slackline's speed over a maximum inhaul of 700 ft., with an average of 250 to 300 ft. A shift can be made in about an hour, if the material suddenly falls off, and it is possible to recover from depths exceeding 100 ft.

Due to the height from which the material is discharged, the slackline cableway readily lends itself to stockpiling. The surge pile can be built to a height of over 60 ft. This makes it possible to operate during periods when the river end of the plant is idle, thus averting complete shutdown such as might well occur if other types of recovery and stockpiling equipment were used.

The present slackline is operated by a Sauerman Roller Bearing Hoist, driven by a 6-cylinder diesel. The 80-ft. mast is so located that the effective height above water level is approx. 95 ft.

Complete details on the above operation were recently published in a leading aggregates producer publication. For full information contact Sauerman Bros., Inc., and request Catalog C., Slackline Cableways.

SAUERMAN BROS. INC.

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Diamond and Shot Core Borings
Dry Sample Borings
Grout Holes and Pressure Grouting
Foundation Testing for Bridges, Dams and other Heavy Structures

Manufacturers, also of Diamond Core Drilling Machines and complete accessory equipment, including all types of Diamond Drilling Bits. Ask for Bulletin 320.

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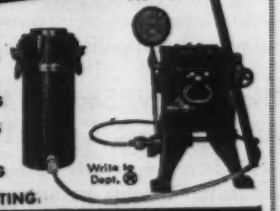

RICHARD DUDGEON INC.
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Anti-trust Prevails

Conspiracy conviction of electrical contractors and union upheld on appeal

Last week the United States Supreme Court rang down the final curtain on another government anti-trust case against a union involved in an illegal conspiracy with an electrical contractors association.

The high court refused to review the conviction of Local 175 of the AFL International Brotherhood of Electrical Workers, found guilty of participating in a conspiracy to eliminate competition in the sale and installation of electrical equipment in the Chattanooga, Tenn., area. Effect of the court's action is to affirm the conviction.

Although the union contended its conduct was within labor's exemption from the anti-trust laws, the lower federal courts ruled that the exemption did not apply under the circumstances. According to the courts, the exemption was lost when the union joined with a non-labor group to practice what the laws prohibit (ENR Mar. 24, p. 96).

The government's case, started in 1953, charged the union, the Chattanooga chapter of the National Electrical Contractors Association and six member contractors with the conspiracy. Both the association and the contractors entered pleas of "nolo contendere"—choosing not to defend against the charges. They were fined $16,500. The union, which fought the case all the way to the Supreme Court, was fined $4,000.

The government accused the electrical contractors of using the association as a means of running a selected bidder system. Under this device, a contractor would be selected for a job, with other contractors merely filing token bids at higher figures.

The union was found guilty of refusing to furnish competent labor to those contractors who wouldn't go along with the selected bidder system and to non-association contractors who submitted competitive bids.

Higher Pay, Shorter Hours Among West Coast Demands

Higher pay, shorter hours and bigger fringe benefits are among the goals sought by the building trades in most of the counties of northern and central California. Negotiations are now underway with the regional chapters of the AGC.

First of the building trades to reach agreement with the AGC was the laborers union, represented by the Northern California District Council of Laborers. It won a 10-cent an hour across-the-board wage increase for 35,000 laborers scattered through 46 counties, making the new rate $2.17½.

With that as a precedent, the AGC has offered a 10-cent increase to cement masons and carpenters. Both unions, in more than 40 counties are asking for a seven-hour day and additional fringe benefits—adding up to a 20-25% increase.

In other negotiations, the demands shape up like this:

- The teamsters have asked for a seven-hour day, paid vacations, eight paid holidays and travel allowance.
- Operating engineers are asking for a 10-cent increase, travel and subsistence allowances and other fringe benefits.

Labor Briefs . . .

- **Bricklayers set record**—A two-year contract without a wage increase has been signed in Philadelphia by the bricklayers union and commercial and industrial contractors. It's the first settlement with the building trades in the area this year—and the first without a wage boost since the war.

- **AFL-CIO merger**—According to an analysis recently completed by the National Industrial Conference Board, 33% of the membership of the new federation will belong to unions organized on a craft basis and 67% to unions industrially organized.

- **Safety**—Largely through cooperation of labor and management, the number of estimated work injuries in contract construction for 1954 dropped 9% from the 1953 total, according to the Labor Department. Totals: 205,000 disabling injuries and 2,400 deaths.

Jobless Benefits and Union Security

The lively issue of union security cropped up again last week in a legal ruling on unemployment benefits in New York State. A machinist who lost his job in a union shop because he refused to join the union was held properly disqualified when he applied for unemployment insurance.

In denying the benefits, the court upheld the determination of a local unemployment insurance office that the employe, by refusing to join the union, had voluntarily given up his employment without good cause.

"We cannot wall ourselves off," the court said, "from the realities of the present-day scene to decide unemployment insurance cases as though we dealt in abstractions. We must look at the world around us as it is. The labor union is a legitimate and quite universally utilized instrument by which labor and management live and work together. When there is an effective union agreement with the employer by which membership in good standing is a necessary ingredient to continued employment, a man who chooses not to have union membership necessarily chooses not to have work in that shop."

The case has particular significance in the light of the current furor over state right-to-work legislation. The union shop agreement which blocked the machinist's path to unemployment benefits is permissible under the Taft-Hartley Act—but only in those states, such as New York that don't have right-to-work laws.

During current legislative sessions, the issue has been the biggest in the labor field (ENR Dec. 16, p. 84). Measures were introduced in 11 states to enact additional right-to-work laws; efforts were made in six states to repeal existing laws. So far, the only success achieved by either side has been in Utah, where the nation's 18th right-to-work law was approved on Feb. 24.

The AFL building trades have also vigorously pushed the issue on the national level (ENR Mar. 17, p. 25). Their goal is the repeal of Section 14 (b) of the Taft-Hartley Act, which permits the states to ban agreements requiring union membership as a condition of employment.

Arguments for and against such laws include these:

- The laws destroy union security which is the heart of free trade unionism.
- An employe who benefits from the gains secured by a union, but who refuses to join, is a "free rider"—he has an obligation to support the union.
- Union membership should be based on persuasion—not coercion.
- Compulsory union membership violates the principle of individual freedom—an employe has the right to make his own decision.

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY. (Except for earlier holiday closing)

Bids: May 19, 1955

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 19th day of May 1955, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, N. F. RONAN, Acting District Engineer, 353 Broadway, Albany, N. Y.						
Albany, Greene, & Schen.	C.T. 55-5	New York State Thruway–Catskill Section–Subs. 3, 3A, 4, 5, 6 and 7 (Ulster–Greene Co. Line to Western Ave.) and Mohawk Section Subs. 1 and 2 (Western Ave. to Schenectady–Montgomery Co. Line)	....	Furnish and Install 80,500 L.F. of Beam Type Guide Railing	$14,000 Plans $10	$255,000
Saratoga	D.A. 55-1	Ketchums Corners East, Town Road Project D-AD-9(1)	0.46	Bituminous Macadam, Type 1	$900 Plans $10	16,000
District No. 4, E. G. H. YOUNGMANN, District Engineer, Barge Canal Terminal, Rochester, N. Y.						
Monroe	FARC 55-28	Brockport–Spencerport, S.H. 5539 Nichols Street, S.H. 9351 Lyell Avenue–Spencerport, S.H. 5529 Project F-783(5)	11.07	Asp. Conc., Opt.	$70,000 Plans $25	1,271,000
DISTRICT No. 5, C. R. WATERS, District Engineer, 65 Court Street, Buffalo, N. Y.						
Erie	FAET 55-1	New York State Thruway (Triple Interchange)–	1.77	9" Two Crse. Cem. Conc. 2 @ 25'-37' Var. Wide	$170,000	3,044,000
	FAOT 55-7	Niagara Section–Sub. 1, Erie Section–Sub. 8E, Ontario (Acc.	1.97)	= 2.68 Mi.	Plans $50	
	N.T. 55-1	Section–Sub. 9A, Harlem Avenue, Rossler Street		Asp. Conc. Opt.= 0.74 Mi. Misc. Work = 0.32 Mi.		
	FARC 55-7	Extension and Clinton Street, Pt. 1, S.H. 371		1 RR-Hy. Sep. Plate Girder 205'		
	FAST 55-1	Project U-1072(2)		6 Hy. Seps. Comp. I-Beams		
	S.T. 55-2			195.8', 272.5', 309', 161', 179' and 143'		
Erie	FARC 55-29	Transit Road, Pt. 4, S.H. 9217 Project F-1079(5)	1.08	Misc. Work = 0.04 Mi. Asp. Conc. Opt.= 1.04 Mi.	$20,000 Plans $10	361,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, N. Y.						
Clinton	FARC 55-31	Champlain Village: Elm, Main and Locust Streets, S.H. 5647 Windsor, Pt. 2, S.H. 136 Windsor, Pt. 1, S.H. 57 Project S-450(1)	3.26	Asp. Conc. Opt.= 3.23 Mi. Misc. Work = 0.03 Mi.	$24,000 Plans $15	414,000
Lewis	FARC 55-32	Lowville–Carthage, S.H. 5332-5332B Project F-330(5)	3.98	Asp. Conc. Opt. = 3.94 Mi. Misc. Work = 0.04 Mi.	$28,000 Plans $15	495,000
St. Lawrence	FARC 55-21	Canton–Potsdam, Pt. 1, S.H. 5115 Project F-457 (4)	3.98	Asp. Conc. Opt = 3.89 Mi. Misc. Work = 0.09 Mi.	$25,000 Plans $15	441,000
DISTRICT No. 8, J. S. BIXBY, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Dutchess	FARC 55-23	Rhinebeck–Elizaville, S.H. 552 Project F-322(13)	4.95	Asp. Conc. Opt.= 4.93 Mi. Misc. Work = 0.22 Mi.	$22,000 Plans $10	379,000
Orange, Rockland, & Ulster	C.T. 55-4	New York State Thruway–Catskill Section–Subs. 3, 4, 5, 6 and 7 (Suffern to Kingston)	....	Furnish and Install 122,050 L.F. of Beam Type Guide Railing	$22,000 Plans $10	400,000
DISTRICT No. 9, F. W. DONOVAN, District Engineer, 71 Frederick Street, Binghamton 21F, N. Y.						
Chenango	FARC 55-30	Norwich–North Norwich, S.H. 505 North Norwich–Sherburne, S.H. 5121 Project F-456(8)	7.82	Asp. Conc., Opt. Widen Exist. 21' Conc. Slab Br. Widen Exist. 27' I-Beam Br. Widen Exist. 21' Conc. Slab Br.	$40,000 Plans $25	723,000

DISTRICT No. 1, N. F. RONAN, Acting District Engineer, 353 Broadway, Albany, N. Y.
DISTRICT No. 2, LACY KETCHUM, District Engineer, 109 No. Genesee St., Utica, N. Y.
DISTRICT No. 3, WM. ROBINSON, District Engineer, Weigh Lock Building, Syracuse, N. Y.
DISTRICT No. 4, E. G. H. YOUNGMANN, District Engineer, Barge Canal Terminal, Rochester, N. Y.
DISTRICT No. 5, C. R. WATERS, District Engineer, 65 Court St., Buffalo, N. Y.
DISTRICT No. 8, J. S. BIXBY, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.

Albany, Greene, Schenectady, Herkimer, Madison, Montgomery, Oneida, Cayuga, Seneca, Onondaga, Genesee, Monroe, Ontario, Erie, Orange, Rockland & Ulster	T.T.S. 55-2	New York State Thruway— Hudson, Catskill, Mohawk and Ontario Sections	....	Furnish and Erect Directional Traffic Signs.	$5,400 Plans $10	98,000

NOTE: Plans and proposal for contract No. T.T.S. 55-2 will be distributed only by our Albany and New York offices but will be exhibited for examination in our District 1, 2, 3, 4, 5, and 8 offices where work is located.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders." When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

John W. Johnson
SUPT. OF PUBLIC WORKS

Bids: May 17, 1955

State Of New Jersey
State Highway Department
Trenton

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 48 (1927) RT. U. S. 40 (1953), SEC. 30

Route 48 (1927) Route U. S. 40 (1953), Section 30, from Jonathans Thorofare to Shore Road; Widening and Resurfacing, Egg Harbor Township and City of Pleasantville, Atlantic County. Length 2.131 miles. The principal items of work are: Estimated:

4,078 cu. yds. Roadway Excavation-Earth
17,430 sq. yds. Macadam Base Course, 4" thick
17,276 sq. yds. Pen. Mac. Inter. Course, 3" thick
945 cu. yds. Road Gravel
9,500 tons Pavement Type FA-BC-2
1,398 lin. ft. Corrugated Metal Pipe, various sizes
18,429 lin. ft. White Concrete Vertical Curb
8,319 sq. yds. Concrete Sidewalk, 4" thick
4,330 sq. yds. Concrete Drives & Gutters, 6" thick

Bids for the above will be received at the office of the State Highway Department in the CAFETERIA, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, May 17, 1955, at NINE o'clock (9:00 A. M.—EASTERN STANDARD TIME), TEN o'clock (10:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plan and equipment with their bid.

Drawing, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans and supplementary specifications will be furnished upon payment of a fee of FIFTEEN DOLLARS ($15.00) for each set upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, with a check drawn to the order of the State Highway Department. A charge of $5.00 will be made for supplementary specifications unaccompanied by construction plans. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and sealed special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: STATE HIGHWAY DEPARTMENT
A. Lee Grover, Chief Clerk

OFFICIAL PROPOSALS

Bids: May 31, 1955

Contract NYA-610.001

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
ADDITIONAL TAXIWAYS

Sealed proposals for the construction of additional taxiways at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, May 31, 1955, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, May 5, 1955

Bids: May 17, 1955

Power Authority Of The State Of New York

ST. LAWRENCE POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF HIGH PRESSURE OIL PIPE-TYPE CABLE
SPECIFICATION NO. PA-4-14004
ST. LAWRENCE CONTRACT NO. P10

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the design, manufacture, and furnishing of two (2) circuits of 230 kv high pressure oil, pipe-type cable and appurtenances and two (2) circuits of 115 kv high pressure oil, pipe-type cable and appurtenances and the delivery thereof f.o.b. the Authority's classification yard, Massena, New York, in the following ways:

(1) If brought in person on the day of receiving bids until 2:30 P.M. Eastern Daylight Saving Time on the 17th day of May, 1955, 270 Broadway, Room 1704, New York, New York.

(2) If mailed in until 2:15 P.M. Eastern Daylight Saving Time on the 17th day of May, 1955, at the Authority's office, 270 Broadway, Room 1300, New York 7, New York.

Each circuit of high pressure, oil pipe-type cable shall consist of the high voltage cable, the steel pipe for the three-phase cable run, non-magnetic pipe (copper tubing) for the single phase cable runs, terminal assemblies (potheads), three-conductor trifurcating joint assemblies or sleeves, straight joint and splice assembly, special insulating oil and appurtenances for connecting the three (3) single phase transformers to the switchyard bus. A dual pumping plant, including all electrical controls, oil reservoir, and all necessary valves, piping (not embedded), gages, and other appurtenances necessary to operate system as specified in the Technical Provisions of this specification, will be required for the two 230 kv circuits and a similar dual pumping plant for the 2-115 kv circuits. Delivery of the first 115 kv cable circuit will be required on or before July 1, 1957, and the remainder of the cable circuits to be delivered in accordance with the delivery schedule in this specification. Bids will be entertained only for all four circuits and associated equipment and services in accordance with the bidding schedule. Erection at the site of installation will be done by others, but services of an erecting engineer shall be provided by the manufacturer if and when required.

Plans, specifications, and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, and may be inspected by prospective bidders during office hours.

Plans, specifications, and Proposal Forms may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, N. Y., upon application and prepayment of a fee of Ten ($10.00) dollars per initial set of contract documents and Five ($5.00) dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids must be made in duplicate upon the proposal forms included in and bound with the Contract Documents. A bid deposit will be required with each bid in an amount not less than 10 per cent of the maximum price bid for any bid schedule.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

May 17, 1955

State Of New Jersey State Highway Department Trenton

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Department for:

UNDERGROUND STRUCTURES FOR TRAFFIC SIGNAL SYSTEMS
(1954-1955, CONTRACT #2)

Underground Structures for Traffic Signal Systems at Various Intersections on New Jersey State Highways. The principal items for installation are:

Estimated:
12,100 lin. ft. Conduit Installations
35 units Service Installations
75 units Junction Boxes
166 units Foundation Installations
110 units Detector Installations
30 units Push Button Installations

Bids for the above will be received at the office of the State Highway Department in the CAFETERIA, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, May 17, 1955, at NINE o'clock (9:00 A.M.—EASTERN STANDARD TIME), TEN o'clock (10:00 A.M. DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must be also submit a revised financial statement and statement of plan and equipment with their bid.

Because of the character of the work to be performed under this contract, bids will be accepted only from contractors prequalified in the classifications of grading; paving or general construction.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans and supplementary specifications will be furnished upon payment of a fee of FIFTEEN ($15.00) for each set upon application to A Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, with a check drawn to the order of the State Highway Department. A charge of $5.00 will be made for supplementary specifications unaccompanied by construction plans. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and sealed special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: STATE HIGHWAY DEPARTMENT
A. Lee Grover, Chief Clerk

Bids: May 25, 1955

Indiana Toll Road Commission 309 W. Washington Street Old Trails Building Indianapolis, Indiana

NOTICE TO BIDDERS
Contract No. TP-1 and RL-1

Sealed proposals will be received by the Indiana Toll Road Commission at or before 10:00 A.M., Central Standard Time, May 25, 1955, for the performance of the contract enumerated above, which is to to be bid in combination.

Toll Plaza Contract TP-1 and RL-1 consists of the construction, at each of the following locations, of a utility building, toll booths and canopies, toll islands, roadway paving and roadway snow melting system within the Plaza Construction Limits, finish grading, parking area paving, seeding, sodding, sewage disposal, water supply, standby electric generator set, plumbing, mechanical and electrical work required for the operation of the entire work and empty conduit systems necessary for installation and operation of toll collection and communication systems and of a roadway lighting system for the Toll Plaza area, for the interchange ramps and for the acceleration and deceleration lanes at the Eastern Terminal as shown on the Plans and specified in the Standard Specifications, Supplemental Specifications for Toll Plazas and Roadway Lighting and Special Provisions.

The Work covered by Contract TP-1 and RL-1 consists of construction at the following Toll Plaza locations:

1. State Route 19 Interchange in the vicinity of Elkhart, Indiana.
2. State Route 13 Interchange east of Bristol, Indiana.
3. State Route 9 Interchange north of LaGrange, Indiana.
4. U. S. Route 27 Interchange north of Angola, Indiana.
5. Eastern Terminal in the vicinity of the Ohio Line east of Angola, Indiana.

Copies of the Plans, Standard Specifications, Supplemental Specifications for Toll Plazas and Roadway Lighting and Proposal forms for said Contract are available for public inspection or purchase at the office of the Chief Engineer, Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. These documents may be purchased from said Chief Engineer for the following sums, per set, which sums are non-returnable:

Standard Specifications for the Indiana East-West Toll Road.....$ 5.00
Supplemental Specifications for Toll Plazas and Roadway Lighting..$ 5.00
Plans and Proposal Forms, per set.$30.00
Information Drawings
Cross Sections for Toll Plazas, per set $10.00

All Proposals must be on the form prescribed by the Commission and must comply with the terms and conditions set forth in the Contract Documents.

Contractor's statement for qualification on the forms supplied by the Commission will be required from all Bidders.

Each Proposal must be accompanied by a Proposal Guaranty in the amount of five (5%) per cent of the total price bid in the Proposal covered by the Contract. The Proposal Guaranty shall be in the form of an acceptable surety bond or a certified check on a solvent bank.

If the Bidder is an out of state corporation, he shall be required to furnish a certificate from the Secretary of State of Indiana as evidence that the corporation has complied with the Indiana Foreign Corporation Statutes, and the corporation is authorized to transact business in the State of Indiana.

All bids must be received at or before 10:00 A.M., Central Standard Time, May 25, 1955, in the offices of the Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. At said hour, the bid box will be publicly opened and the bids read.

The award of the above Contract, if any award be made, will be to the Bidder or Bidders whose Proposal is lowest and best for the performance of the work, taken as a whole, and complies with all the prescribed requirements. The Commission reserves the right to reject any or all Proposals and to waive technicalities.

INDIANA TOLL ROAD COMMISSION
Dr. Dillon Geiger
Chairman

Charles W. Keating
Secretary-Treasurer

OFFICIAL PROPOSALS

Bids: May 26, 1955

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the twenty-sixth day of May 1955, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 No. Genesee St., Utica 1, N. Y.						
Oneida	FARC 55-34 Project S-429(1)	Vernon-Verona Station, S. H. 1930	3.42	Asp. Conc., Opt.	$20,000 Plans $10	$363,000
DISTRICT No. 4, E. G. H. Youngmann, District Engineer, Barge Canal Terminal, Rochester, N. Y.						
Genesee	P.S.C. 5396 P.S.C. 5936 P.S.C. 6500 P.S.C. 7685	Elimination of the New York Central and Lehigh Valley Railroads with Various Streets and the Erie Railroad in the City of Batavia	2.33 (4.75 RR Rel.)	Railroad Relocation = 4.75 Mi. Cem. Conc. Pavt. Var. Wide = 0.69 Mi. Asp. Conc. Opt. = 1.64 Mi. 5 RR Sep. Plate Girders 109', 59', 74', 78' and 100.4' 3 RR Sep. I-Beams 39.3', 52.7' and 23.5' 1 RR Sep. Comp. I-Beam 569.9' 1 Br. Truss 165'	$350,000 Plans $100	$6,614,000
DISTRICT No. 8, J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Ulster	FARC 55-33 Project F-462(6)	Kingston-Ellenville, Pt. 3, S. H. 141	2.90	Asp. Conc., Opt.	$11,000 Plans $10	194,000
Westchester	H.T. 55-4	New York State Thruway—Hudson Section—Subs. 10 and 11 (Tuckahoe Road-Tarrytown)	....	Furnish and Erect 3,200 L. F. Woven Wire Fence	$600 Plans $10	11,000
Orange	C.T. 55-7	New York State Thruway—Catskill Section-Sub. 7 (Suffern-Harriman)	0.06	Misc. Work Ped. Overpass Comp. I-Beam 195.5'	$2,200 Plans $10	39,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders."

The right is reserved to reject any or all bids.

John W. Johnson
SUPT. OF PUBLIC WORKS

Bids: May 17, 1955

State Of New Jersey
State Highway Department
Trenton

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

WHITEHEAD ROAD EXTENSION—
FAS PROJECT S-194 (1)

Construction of Whitehead Road Extension from Brunswick Avenue (U.S. Route 1) to Trenton Freeway (U.S. Route 1 Extension) in Lawrence Township, Mercer County, New Jersey, Federal Aid Secondary Project No. S-194 (1). Length—0.341 miles. The principal items of construction are:

Estimated:
11,704 cu. yds. Roadway Excavation
11,015 cu. yds. 5" Mac. Base Course
10,300 sq. yds. 3" Mod. Pen. Mac.
22,700 gals. Bituminous Material
1,863 tons Bituminous Concrete
2,261 lin. ft. Drainage
17 units Inlets and Manholes
3,625 lin. ft. Concrete Curb

Bids for the above will be received at the office of the State Highway Department, in the CAFETERIA, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., on Tuesday, May 17, 1955, at NINE o'clock (9:00 A.M.—EASTERN STANDARD TIME), TEN o'clock (10:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plan and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Secondary Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and by P. L. 769, 81st Congress, and is to be performed in accordance with the "Required Provisions —Federal Aid Contracts" of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $0.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by propective bidders during office hours. Plans and supplementary specifications will be furnished upon payment of a fee of FIFTEEN DOLLARS ($15.00) for each set upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., with a check drawn to the order of the State Highway Department. A charge of $5.00 will be made for supplementary specifications unaccompanied by construction plans. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and sealed special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: STATE HIGHWAY DEPARTMENT
A. Lee Grover, Chief Clerk

Bids: May 18, 1955

Pennsylvania Turnpike Commission
Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a.m., Eastern Daylight Saving Time, the 18th day of May 1955, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room No. 1, North Office Building, State Capitol, Harrisburg, Pennsylvania, and publicly opened and read aloud for the following contract:

For the construction of structures and the grading, drainage and paving of the Turnpike Section 371, part of the Northeastern Extension of the Pennsylvania Turnpike in Pittston Township and the Borough of Dupont, Luzerne County, Commonwealth of Pennsylvania. This section being situated as follows:

The Erie Railroad crossings used in this description are respectively 1.41 miles southwest and 2.25 miles northeast of the center line of Turnpike intersection with L. R. 665 or T. R. 215.

Beginning at a point approximately 616.5 lineal feet northeast of the centerline intersection of the Erie Railroad at Turnpike station 853+75 in Pittston Township, Luzerne County; thence in a northeasterly direction 15,176 lineal feet more or less to Turnpike station 1005+50 at a point approximately 3,540 lineal feet southwest of the centerline of the Erie Railroad Branch Line intersection with the centerline of the Turnpike in Pittston Township, Luzerne County, a distance of approximately 2.87 miles.

The approximate quantities of the principal items are as follows:

Class 1 Excavation	801,614 cu. yds.
Class 1A Excavation	109,040 cu. yds.
Class 2 Excavation	17,605 cu. yds.
Class 2A Excavation	743 cu. yds.
Borrow Excavation	133,074 cu. yds.
Special Subgrade	179,587 sq. yds.
Reinforced Concrete Pavement	108,172 sq. yds.
Class A Concrete	1,657 cu. yds.
Class B Concrete	1,197 cu. yds.
Plain Steel Bars	321,565 lbs.
Fabricated Structural Steel	736,400 lbs.
Median Divider	14,640 lin. ft.
Cast-in-Place Concrete Piling	1,160 lin. ft.

Copies of plans, specifications and other contract documents including cross sections, are on file and open to public inspection at the office of the Pennsylvania Turnpike Commission located at Harrisburg, Pennsylvania, on 3 May 1955. Plans, specifications, cross-sections and other contract documents will be available by this date for inspection or for mailing to prospective bidders. Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five (5) dollars per copy. Copies of cross sections may be purchased from the Pennsylvania Turnpike Commission for the sum of fifty (50) dollars per set.

Plans and contract documents, for this section exclusive of cross-sections and specifications, may be purchased from the Pennsylvania Turnpike Commission for the sum of twenty (20) dollars for each set. No refund will be made for plans returned unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P. O. money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications, contract documents, and cross-sections.

The character and amount of bid security to be furnished by the bidder is stated in the Instructions to Bidders.

The Commission reserves the right to waive any informalities in or to reject any or all bids.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer

Harrisburg, Pennsylvania
26 April 1955

U. S. Government

Sealed bids for replacement of coal handling equipment, Saint Elizabeths Hospital, Washington, D. C., will be received until 2:00 P. M., EDT May 20, 1955 in Rm. 7100 GSA Regional Office Bldg., 7th & D Sts., S. W., Washington, D. C., and then publicly opened in Rm. 7100. Bidding material may be obtained from Public Buildings Service, Rm. 1304 General Services Bldg., 19th & F Sts., N. W., Washington, D. C., Executive 3-4900, Extn. 2397. P. A. Strobel, Commissioner of Public Buildings, General Services Administration.

OFFICIAL PROPOSALS

Bids: May 19, 1955

Massachusetts Turnpike Authority

NOTICE TO CONTRACTORS

Sealed proposals for Highway and Bridge construction for a section of the Massachusetts Turnpike in the City of Chicopee (CONTRACT NO. 51-192) will be received at the office of the Secretary-Treasurer, Massachusetts Turnpike Authority, Room 1059, 80 Boylston Street, Boston 16, Massachusetts until 10:00 A.M. of Thursday, May 19, 1955, and immediately thereafter will be publicly opened and read in the Surrey Room on the lobby floor of the Hotel Touraine across the street from the Turnpike Authority's offices.

Proposal Guaranty: $140,000.

Charge for plans and proposal forms: $100.00, not refundable.
Charge for printed copy of Standard Specifications: $10.00, not refundable.

Complete information at said office of the Authority: at office of General Consulting Engineer to Authority: Howard, Needles, Tammen & Bergendoff, Room 1146, 80 Boylston Street, Boston 16, Massachusetts, and at office of Section Engineer: Charles A. Maguire & Associates, 14 Court Square, Boston, Massachusetts.

Minimum wage and dump-truck rates have been established. Right reserved to waive any informality in or reject any or all proposals. An award will not be made to a Contractor who is not equipped to promptly undertake and complete the work.

By: WILLIAM F. CALLAHAN, Chairman
April 23, 1955

Bids: May 17, 1955

State Of New Jersey State Highway Department Trenton

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 42, NORTH-SOUTH FREEWAY, SECTIONS 12-C and 13-A

Route 42, North-South Freeway, Sections 12-C and 13-A, from Route U.S. 130 to Browning Road; Grading, Bridges and Incidental Paving, Gloucester City, Mount Ephraim and Bellmawr Boroughs, Camden County. Federal Project No. U-193(3). Length 1.073 miles. The principal items of work are:

Estimated: Roadway Items
223,532 cu. yds. Roadway Excavation—Earth
126,729 cu. yds. Wet Excavation
170,078 cu. yds. Borrow Excavation
19,600 cu. yds. Porous Fill
6,400 cu. yds. Channel Excavation
5,100 sq. yds. Macadam Base Course, 8" thick
5,100 sq. yds. Pavement Type MA-BC-2, 3" thick
4,315 sq. yds. Conc. Pavement Surface, Rein. 9" thick
3,900 lin. ft. Rein. Conc. Culvert Pipe, various sizes
790 lin. ft. Cast Iron Culvert Pipe, various sizes
35 Inlets and Manholes
4,700 lin. ft. White Concrete Vertical Curb
4 Demolition of Buildings
Bridge Items
14,624 cu. yds. Concrete in Structures
861,790 lbs. Reinforcement in Structures
1,991,350 lbs. Structural Steel
70,450 lin. ft. Timber Piles

Bids for the above will be received at the office of the State Highway Department in the CAFETERIA, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., on Tuesday, May 17, 1955, at NINE o'clock (9:00 A.M.—EASTERN STANDARD TIME), TEN o'clock (10:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plan and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and by P. L. 413, 82nd Congress, and is to be performed in accordance with the Required Provisions—Federal-Aid Contracts of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $0.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans and supplementary specifications will be furnished upon payment of a fee of TWENTY-FIVE DOLLARS ($25.00) for each set upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Ave., Trenton, N. J., with a check drawn to the order of the State Highway Department. A charge of $5.00 will be made for supplementary specifications unaccompanied by construction plans. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified chcek drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500. nor more than $20,000. and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and sealed special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: STATE HIGHWAY DEPARTMENT
A. Lee Grover, Chief Clerk

Bids: May 17, 1955

State Of New Jersey State Highway Department Trenton

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 35, SECTION 5-C

Route 35, Section 5C, from Maple Avenue to Navesink River, Widening and Resurfacing, Borough of Red Bank, Monmouth County, Federal Project No. F-4(3). Length 0.500 miles. The principal items of work are:

Estimated:
4,722 cu. yds. Roadway Excavation-Earth
1,424 cu. yds. Subbase
1,750 sq. yds. Gravel Base Course, 8" thick
4,082 sq. yds. Macadam Base Course, 4" thick
575 sq. yds. Concrete Base Course, 9" thick
4,082 sq. yds. Pen. Mac. Inter. Course, 3" thick
2,085 tons Pavement Type MA-BC-2
1,018 lin. ft. Corrug Metal Pipe, various sizes
22 Inlets and Manholes
4,165 lin. ft. White Concrete Vertical Curb

Bids for the above will be received at the office of the State Highway Department in the CAFETERIA, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., on Tuesday, May 17, 1955, at NINE o'clock (9:00 A.M.—EASTERN STANDARD TIME), TEN o'clock (10:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plan and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and by P. L. 413, 82nd Congress, and is to be performed in accordance with the Required Provisions—Federal-Aid Contracts of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $0.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans and supplementary specifications will be furnished upon payment of a fee of FIFTEEN DOLLARS ($15.00) for each set upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., with a check drawn to the order of the State Highway Department. A charge of $5.00 will be made for supplementary specifications unaccompanied by construction plans. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and sealed special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed:
STATE HIGHWAY DEPARTMENT
A. Lee Grover, Chief Clerk

Bids: May 24, 1955

Contract NYA-670.001

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
BUILDING NO. 196

Sealed proposals for the construction of Building No. 196 at New York International Airport, a one-story building with space for offices, warehousing and shops, including paving, landscaping and utilities therefor will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, May 24, 1955, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of the documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, May 5, 1955

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4415) will be received at Albuquerque, New Mexico, until May 18, 1955, for furnishing labor and materials for drilling and grouting, El Vado Dam Rehabilitation, Middle Rio Grande Project, New Mexico. Location in Rio Arriba County, New Mexico. Principal items are 2,400 lin. ft. drilling grout holes in concrete; 4,400 lin. ft. drilling grout holes in rock and other foundation materials; 16,000 sacks of pressure grouting; 4,000 bbls. furnishing and handling cement; and other work. Completion time 360 days. For particulars, address Bureau of Reclamation, P. O. Box 252, Albuquerque, New Mexico; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: May 17, 1955

Power Authority Of The State Of New York

ST. LAWRENCE POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF GENERATOR GROUNDING CUBICLES
SPECIFICATIONS NO. PA-5-14007
ST. LAWRENCE CONTRACT NO. P16

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the design, manufacture, and furnishing of sixteen (16) generator grounding cubicles and delivery thereof f. o. b. the Authority's classification yard, Massena, New York in the following ways:

(1) If brought in person, on the day of receiving bids until 10:30 A.M. Eastern Daylight Saving Time on the 17th day of May, 1955, 270 Broadway, Room 1704, New York, New York.

(2) If mailed in, until 10:15 A.M. Eastern Daylight Saving Time on the 17th day of May, 1955, at the Authority's office, 270 Broadway, Room 1300, New York 7, New York.

Bids will be entertained for 16 generator grounding cubicles and associated equipment and services in accordance with the bidding schedule. Erection at the site of installation will be done by others but services of an erecting engineer shall be provided by the manufacturer if and when required.

Plans, specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, and may be inspected by prospective bidders during office hours.

Plans, specifications, and Proposal Forms may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Ten ($10.00) dollars per initial set of contract documents and Five ($5.00) dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids must be made in duplicate upon the proposal forms included in and bound with the Contract Documents. Bid deposit will be required with each bid in an amount not less than 10 percent of the price bid for the schedule.

The right is reserved to reject any or all bids.

W. S. CHAPIN
PA-5-14007 GENERAL MANAGER

Bids: May 24, 1955

ADVERTISEMENT FOR BIDS
FURNISHING AND INSTALLING
INCINERATOR CRANE
ARLINGTON COUNTY, VIRGINIA

Sealed proposals for furnishing all materials and equipment and doing all work required for the Furnishing and Installing of an Incinerator Crane, as described below, will be received by the Purchasing Agent in Room 213, in the Court House Building at Arlington County, Virginia, until 11:00 A.M., Eastern Daylight Saving Time, on MAY 24, 1955, and there publicly opened and read immediately thereafter:

CONTRACT B
FURNISHING AND INSTALLING INCINERATOR CRANE AND APPURTENANCES

1. Location: The work is located in Arlington County, Virginia at S. Eads Street and 31st Streets.
2. Type of Work: The principal items of work include the following:—A three and half ton capacity Incinerator Crane and associated equipment and appurtenances.
3. Copies of Plans and Specifications, Information for Bidders, Bid Forms and other bidding and contract documents may be examined at the office of the Sanitary Engineer, Sanitation Division, Arlington, Va.; at Dodge Reports, 900 F. Street, N.W., Washington, D. C. and at the office of ALEXANDER POTTER ASSOCIATES, CONSULTING ENGINEERS, 50 CHURCH ST., NEW YORK (7) N. Y.
4. Copies of Plans, Specifications and Bidding Documents may be obtained from the Purchasing Agent in Room 213, Court House Building at Arlington, Virginia upon deposit of TEN ($10.00) DOLLARS PER SET. Full refund will be made to actual bidders for return of One (1) Set, in good condition, within two weeks after closing date for receipt of bids; refund for return of all other sets, in good condition, WITHIN THE SAME PERIOD, will be Fifty (50%) percent of the deposit. No refund will be made for return of documents in poor condition or later than the two week period stipulated.

All bids must be on the form contained in the Contract and Specifications.

Contractors, whether resident or non-resident in Virginia will be required to show evidence of a certificate of registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered, if the bid is $20,000 or more.

All bids must be accompanied by a certified check or acceptable bidder's bond in an amount of not less than Five Per Cent (5%) of the amount of the bid, made payable to the Treasurer of Arlington County, as bid security.

The successful bidder will be required to furnish a Performance Bond conditioned upon the faithful performance of the Contract and upon payment of all persons supplying labor and furnishing materials on the construction of the work.

No bidder may withdraw his bid within Thirty (30) Days after actual date of opening thereof.

The County Board of Arlington County, Virginia, reserves the right to reject any or all bids and to waive any informality in the bids.

ARLINGTON COUNTY, VIRGINIA
By: A. T. Lundberg
County Manager

Bids: July 1, 1955

Construction of a Sewage Treatment Plant

ADVERTISEMENT

Notice is hereby given that sealed bids will be received in accordance with the law by the Puerto Rico Aqueduct and Sewer Authority until 3:00 o'clock P.M. on the first day of July, 1955, at the office of the Authority in Santurce, Puerto Rico, and will then be publicly opened and read.

The work comprises furnishing materials and performing the labor for the furnishing of equipment for and the construction of the Puerto Nuevo Sewage Treatment Plant, a primary sewage treatment plant with an initial capacity of twenty-four (24) million gallons per day.

Copies of the plans and specifications may be examined without charge at the office of the Puerto Rico Aqueduct and Sewer Authority, Santurce, Puerto Rico, or at the offices of Buck, Seifert and Jost, Consulting Engineers, 223 Manuel V. Domenech Street, Hato Rey, Puerto Rico and 112 East 19th Street, New York 3, New York. Copies thereof may be obtained at the office of the Treasurer of the Puerto Rico Aqueduct and Sewer Authority, Stop 26½, Fernandez Juncos Avenue, Santurce, Puerto Rico or at the office of Buck, Seifert and Jost, Consulting Engineers, 112 East 19th Street, New York 3, New York, upon deposit of cash or certified check payable to the Puerto Rico Aqueduct & Sewer Authority in the amount of One Hundred and Fifty ($150.00) Dollars, which sum will be refunded upon return of the plans and specifications in good condition within twenty (20) days after the date on which bids are received or else the entire deposit will be forfeited.

Bids will be received only from persons who have requested the plans and specifications and made the required deposit therefore under their own names. These documents cannot be obtained later than June 15, 1955.

The work to be performed is divided into six (6) sections, under which the work is classified according to its character. The principal items of work are as follows:

SECTION B—Furnishing and delivering C.I.F. San Juan, Puerto Rico, one (1) mechanically cleaned bar screen in combination with one (1) screenings shredder, together with their mechanisms and appurtenances and the services of an expert to supervise the installation and testing of the equipment.

SECTION C—Furnishing and delivering C.I.F. San Juan, Puetro Rico, grit handling equipment for a forty (40') feet diameter grit chamber, including collecting and cleaning equipment and their mechanisms and appurtenances, together with the services of an expert to supervise the installation and testing of the equipment.

SECTION D—Furnishing and delivering C.I.F. San Juan, Puerto Rico, sludge collectors and accessory equipment for four (4) settling tanks, together with their mechanisms and appurtenances, and the services of an expert to supervise the installation and testing equipment.

SECTION E—Furnishing and delivering C.I.F. San Juan, Puerto Rico, chlorinating equipment, including three (3) chlorinators, three (3) evaporators, two (2) scales and all piping required for chlorine gas and chlorine solution, together with their mechanisms and appurtenances and the services of an expert to supervise the installation and testing of the equipment.

SECTION F—Furnishing and delivering C.I.F. San Juan, Puerto Rico, four (4) electric motor driven sewage pumping units, one (1) unit of seven thousand (7,000) gallons per minute capacity, two (2) units of fourteen thousand (14,000) gallons per minute capacity and one (1) unit of twenty-one thousand (21,000) gallons per minute capacity, complete with their motors, mechanisms and appurtenances and the services of an expert to supervise the installation and testing of the equipment.

SECTION G—Constructing the Puerto Nuevo Sewage Treatment Plant including influent sewer, influent junction chamber, screening chamber, main sewage pumping station, grit chamber, settling tanks, effluent chamber, outfall sewer, sludge pumping station, sludge digestion tanks and digester control building, non-potable water supply system, administration building, garage and shop, outside connecting piping, roadways and paths, grading, miscellaneous structures and appurtenances and the installation of screening, grit handling, settling tank, chlorinating and pumping equipment furnished by others.

Bidders will be allowed to bid on one (1) or more sections.

Each proposal must be accompanied by a certified check or bid bond from a reliable surety company authorized to do business in Puerto Rico and satisfactory to the Authority in amount equal to five (5%) percent of the proposal. The certified checks will be retained to pay for any damage or loss to the Authority or the liability bond will accrue in case the successful bidder shall neglect or refuse to enter into a contract in accordance with his proposal.

The Authority reserves the right to consider bids for thirty (30) days after their receipt before awarding any contract and the right is reserved to waive any informalities, to accept any bid or to reject any or all of them.

PUERTO RICO AQUEDUCT AND
SEWER AUTHORITY
By RAFAEL V. URRUTIA
Executive Director
BUCK, SEIFERT AND JOST
Consulting Engineers

U. S. Government

Department of Commerce, Bureau of Public Roads, April 22, 1955. SEALED BIDS will be received at the office of the Forest Supervisor, United States Forest Service, Room 218, Post Office Building, Liberty Street and 2nd Avenue, Warren, Pennsylvania, until 11:00 a.m., E.S.T., MAY 24, 1955, for Pennsylvania Forest Highway Project No. 11-B, Elk County, Pennsylvania. Grading, Draining, Gravel Base and other work from about 2 miles east of Hallton to about 2 miles west of Ridgway. Length: 6.396 miles. The approximate quantities of the more important items are 54,400 cu. yd. Excavation, 17,000 cu. yd. Gravel Base Course, 175 cu. yd. Concrete, and 3,065 lin. ft. Concrete Culvert Pipe. Minimum wage rates have been fixed as required by law. Plans, specifications and proposal forms are available upon request at the Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia. Plans and specifications may be examined at the Forest Supervisor's office in Warren. H. J. Spelman, Division Engineer.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4416) will be received at Ogden, Utah, until June 23, 1955, for furnishing labor and materials for Stoddard Diversion Dam and Gateway Canal, Station 1+52.2 to Station 48+19.7, Weber Basin Project, Utah. Location near Morgan, Utah. Principal items are 103,200 cu. yds. excavation; 18,000 cu. yds. placing earth lining; 770 cu. yds. concrete in canal lining; 1,850 cu. yds. concrete in structures; and other work. Completion time 540 days. For particulars, address Bureau of Reclamation, P. O. Box 387, Ogden, Utah; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: August 31, 1955

Government of Iraq

DEVELOPMENT BOARD
MINISTRY OF DEVELOPMENT
CONSTRUCTION OF THE DAM, SPILLWAY, OUTLET, AND APPURTENANT WORKS DERBEND-I-KHAN PROJECT

The Development Board of the Government of Iraq invites Tenders for the construction of the Dam, Spillway, Outlet and Appurtenant Works for the Derbend-i-Khan Project located on the Diyala Sirwan River about 35 Kilometers southwest of Halabja and some 300 Kilometers northeast of Baghdad. The Documents for tender provide for alternative tendering on the construction of either a concrete gravity dam or a rockfill dam and persons tendering may submit proposals for constructing either or both of the alternative types of dam. The principal quantities of work involved are as follows:

CONCRETE DAM ALTERNATIVE

Open Excavation (Common)	370,000 cu. m.
Open Excavation (Rock)	830,000 cu. m.
Concrete (Mass)	1,600,000 cu. m.
Concrete (Reinforced)	23,000 cu. m.
Formwork (all types)	190,000 sq. m.
Steel Reinforcement	3,200,000 Kg.
Cooling Concrete	1,100,000 cu. m.

Auxiliaries and equipment including: Spillway gates, Outlet Conduits and Power Penstocks, Outlet Works Valves, Gantry Crane, Elevators, Station Service Generating Units including Switchboards, Control Panels, and Distribution Panel Boards and miscellaneous mechanical and Electrical Equipment.

ROCKFILL DAM ALTERNATIVE

Open Excavation (Common)	1,700,000 cu. m.
Open Excavation (Rock)	690,000 cu. m.
Tunnel Excavation (all classes)	85,000 cu. m.
Dumped Rockfill	4,860,000 cu. m.
Filters (all types)	480,000 cu. m.
Impervious Rolled Earth Core	1,150,000 cu. m.
Concrete (Spillway)	180,000 cu. m.
Concrete (Intake)	25,000 cu. m.
Concrete (Powerhouse and Outlet Works)	18,000 cu. m.
Concrete (Diversion Tunnel and Outlet Conduit)	28,000 cu. m.
Formwork (all types)	100,000 sq. m.
Steel Reinforcement	3,900,000 Kg.

Auxiliaries and equipment including: Spillway Gates, Outlet Conduits and Power Penstocks, Outlet Works Valves, Gantry Crane, Elevator, Station Service Generating Units including Switchboards, Control Panels and Distribution Panel boards and miscellaneous mechanical and electrical equipment.

Tenders will be considered only for the complete work as specified in the Documents for tender. Copies of the Documents for tender may be inspected at the following addresses on or after April 20, 1955.

(a) Directorate General of Legal Affairs and Contracts, Ministry of Development, Baghdad.
(b) Iraqi Embassies or Legations in London, Paris, Washington, New Delhi, Karachi, Cairo, Bonn, Brussels and Rome.
(c) Egyptian Consulate at Bern, Switzerland.
(d) Offices of the Consulting Engineers, Harza Engineering Company, 400 West Madison Street, Chicago, Illinois.

Copies of the Documents for Tender may be obtained on payment of Twenty Five (25) Iraqi Dinars or the equivalent (which is not refundable) at all of the above listed addresses except the Iraqi Embassies at Karachi and Cairo.

Tenders shall be in English and they must be accompanied by a preliminary deposit of I.D.100,000 (one hundred thousand Iraqi Dinars) either in cash to the Development Board or by letter of guarantee from an approved bank in Iraq.

Tenders shall be enclosed in a sealed package and endorsed clearly on the outside with the words "TENDER FOR THE DERBEND-I-KHAN DAM, SPILLWAY, OUTLET, AND APPURTENANT WORKS". They shall be addressed to the Development Board, Ministry of Development, Baghdad, Iraq and delivered to the Directorate General of Legal Affairs and Contracts, Ministry of Development, Baghdad, on or before 12 o'clock noon, local time, August 31, 1955. If sent by post, the tenders shall be registered but tenderers must assure themselves of delivery to the Board in due time.

Tenders not submitted within the time specified, or not accompanied by a receipt of the deposit or a letter of guarantee will not be considered.

OFFICIAL PROPOSALS

The attention of the tenderers is called to the fact that tenders will be accepted only from firms which have previously carried out works of the same character and magnitude.

During the period of time allowed for tendering, the Board reserves the right to amend the documents for purposes of clarification or to reflect modifications in the design or contract terms. Any such amendments will be in the form of formal addendum distributed to prospective tenderers.

The Development Board does not bind itself to accept the lowest or any tender.

Minister of Development.

Bids: May 27, 1955

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
FOR
CHANNEL IMPROVEMENTS
GALOP ISLAND SOUTH CHANNEL
NEAR OGDENSBURG,
ST. LAWRENCE COUNTY, NEW YORK
SPECIFICATIONS NO. PA-511019
ST. LAWRENCE CONTRACT NO. 15

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of Galop Island South Channel near Ogdensburg, St. Lawrence County, New York in the following ways:

(1) If brought in person on the day of receiving bids until 10:30 A. M. Eastern Daylight Saving Time on the 27th day of May, 1955, 270 Broadway, Hearing Room C on the 6th floor, New York, New York.

(2) If mailed in until 10:15 A. M. Eastern Daylight Saving Time on the 27th day of May, 1955, at the Authority's office, 270 Broadway, Room 1300, New York 7, New York.

The proposals will be publicly opened and read aloud at the time and at the address given in (1) above.

The principal items of work are:
Estimated:
5,000,000 cu. yds. Excavation, Common
497,000 cu. yds. Excavation, Rock

The work shall be completed on or before March 1, 1956.

Plans, specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, and may be inspected by prospective bidders during office hours.

Plans, specifications and Proposal Forms may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Ten ($10.00) dollars per initial set and five ($5.00) dollars per set for additional sets, no part of which will be refunded.

Bids will be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 10 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: May 23, 1955

Eastern Utilities Commission

ADVERTISEMENT FOR BIDS

Sealed Proposals will be received by The Easton Utilities Commission at their office in Easton, Maryland until 8:00 P. M., E.D.S.T., Monday, May 23, 1955 for repairing and painting one water storage standpipe and painting one elevated water storage tank and tower in the Town of Easton, Maryland.

Form of Contract, Specifications and Blank Proposals may be obtained from the Secretary-Treasurer of the Easton Utilities Commission upon deposit of ten ($10.00) dollars.

A certified check, cash or a bid bond in an amount of not less than ten per centum (10%) of the amount of the base bid must accompany each bid.

The Easton Utilities Commission of Easton, Maryland reserve the right to reject any or all bids or sections of bids as deemed to the best interest of the Town of Easton, Maryland.

WM. H. CORKRAN, JR.,
TOWN ENGINEER
RALPH A. TOWNSEND
SECRETARY-TREASURER

OFFICIAL PROPOSALS

Bids: May 24, 1955

The Hydro-Electric Power Commission of Ontario

ST. LAWRENCE POWER PROJECT
CONSTRUCTION OF CORNWALL DYKE

SEALED TENDERS, in quadruplicate, addressed to the undersigned, 620 University Avenue, Toronto 2, Ontario, and clearly marked

"TENDER FOR ST. LAWRENCE POWER PROJECT CONSTRUCTION OF CORNWALL DYKE"

will be received up to 4:30 o'clock p.m. Eastern Daylight Saving Time on

TUESDAY, MAY 24, 1955

for the construction of any or all of three sections of the Cornwall Dyke on the north bank of the St. Lawrence river, International Rapids section, approximately four miles west of Cornwall, Ontario.

The work consists of all necessary clearing, grubbing, excavation, foundation preparation, and construction of dykes, including compacted earth fill, pervious zone, riprap protection, filter and drainage layers and granular topping. All work is to be completed as follows: Section 1 by November 30, 1957; Section 2 by November 30, 1957; Section 3 by November 30, 1956.

Copies of the tendering documents may be obtained on and after April 29, 1955, at the office of the Director of Supply, Ontario Hydro, 620 University Avenue, Toronto 2, Ontario, on payment of $25.00 for each set. This charge will not be refunded.

Tendering documents may be inspected at the above location and at the offices of the following: The Commission's Field Office, Mille Roches, Ontario; Power Authority of the State of New York, 270 Broadway, New York 7, New York; and Uhl, Hall and Rich, 230 Congress Street, Boston 10, Massachusetts.

Tenders must be accompanied by certified cheques drawn on a Canadian chartered bank or, in the case of a United States tenderer, a draft in Canadian funds drawn by the United States agency of a Canadian chartered bank on the said bank's main office in Toronto, Canada, for the sum of one hundred and fifty thousand dollars ($150,000) for each section tendered on. Provisions for the return of the cheques appear in the tendering documents.

Each successful tenderer will be required to furnish a performance bond, in the form approved by the Commission, and issued by a bonding company licensed as such in the Province of Ontario and acceptable to the Commission, for one hundred per cent (100%) of the total amount of its contract.

The lowest or any tender will not necessarily be accepted.

E. B. EASSON
SECRETARY

U. S. Government

May 18, 1955

NOTICE OF OMISSION

Bid date on Project #21 Erection of Schools on St. Croix, Virgin Islands is **May 18, 1955.** This date was omitted from advertisements as printed in April 7, 14, and 21 issues of this publication.

For full details on this project refer to complete ad in the issues mentioned above.

Official Proposal Section
Engineering News-Record

Read the Official Proposal Columns of ENGINEERING NEWS-RECORD This Week and Every Week

EMPLOYMENT

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Gunite Engineer for estimating and project coordination as assistant to President of Nationally known Gunite Company, Philadelphia area. P-6085, Engineering News-Record.

Instructor or assistant professor with M.S. degree to teach Mechanics and Route Surveying. Salary for nine months $4,000, to $5,000, depending on qualifications. Location, Northern New York. P-6114, Engineering News-Record.

Assistant Engineers: Wanted by the City of Ann Arbor, Michigan population 55,000, two graduate civil engineers with experience in Municipal engineering. One engineer with experience in sewer and pavement design. One engineer with experience in street maintenance for street superintendent and supervisor of municipal garage. Retirement plan, sick leave, blue cross, medical, surgical and hospitalization insurance, group life insurance and paid vacation of two weeks after first year, three weeks after fifteen years. Salary $5,000 to $6,000. Apply to City Engineer, City Hall, Ann Arbor, Michigan.

Chief Job office engineer with extensive experience in heavy construction. No surveying or field layout work involved. 2 civil engineers with 4-5 years experience in heavy construction to assist the chief job engineer with quantity take-offs, form design and drafting, etc. 1 cost engineer to supply field information required by the cost department, 1 cost department quantity take-off man on heavy construction. Reply to P. O. Box 82 Aurora, Minnesota with complete resume of education, experience and salary expected.

Attention . . .

EMPLOYMENT ADVERTISERS

Effective with the first July issue, a new section will start in ENGINEERING NEWS-RECORD. We will head this section: EMPLOYMENT OPPORTUNITIES. All Displayed Employment Opportunity advertising will be placed in this new section, with the exception of those advertisers who contract for run-of-book position. New advertisers will be billed at the transient rate of $24.25 unless on contract. Contract rates furnished on request. Advertisements are subject to Agency Commission.

For full information write:

ENGINEERING NEWS-RECORD

Classified Advertising

330 West 42nd St.,
New York 36, N. Y.

PROJECT ENGINEER

Graduate mechanical engineer with 10 years experience in process industries, preferably food or chemical, for plant engineering division of large national food company. Design and installation of new facilities. Under 38 years age. Salary commensurate with experience. Submit detailed resume.

P-6343, Engineering News-Record
330 W. 42nd St., New York 36, N. Y.

POSITIONS VACANT

Wanted: General superintendent for mid-western building construction organization. Age between 35 and 50. A good opportunity with salary and bonus for qualified man. Submit complete resume and required salary. P-6199, Engineering News-Record.

Bridge Designers Wanted. Permanent location—5 day week—retirement. Reply stating experience, education, age. Wyoming Highway Department, Cheyenne, Wyoming.

Wanted: Graduate engineer or architect with at least three years experience in building layout and design. P-6283, Engineering News-Record.

Structural Draftsman in a small growing structural shop. Unusual opportunity for growth. Douglas Steel Fabricating, Box 5102, Lansing, Mich.

Graduate Engineer about 35 years of age with at least 10 years experience in estimating for general contractor in Newark, N. J. industrial, commercial and institutional buildings. State references, experience and salary desired. P-6258, Engineering News-Record.

Instructors: Mechanics, structural theory, and highway traffic, beginning September 1, 1955. Location, Mississippi. P-6286, Engineering News-Record.

Engineer to estimate and design prestressed concrete members for established prestressed concrete manufacturing plant. P-6285, Engineering News-Record.

Instructor—For drawing, freshman engineering problems, mechanics. Branch immaterial. Beginning in September. Salary determined by qualifications. Nine months per year. Apply to Dean of Engineering, Colorado A & M College, Fort Collins, Colorado.

Structural Designer, Food Manufacturer has opportunity for young graduate engineer with three to five years of experience in design and/or construction of industrial buildings or equivalent work. Location, Southern Michigan. This is an exceptionally fine opportunity for future development to the person who has leadership potential and proven work habits. State qualifications, age, salary and availability. Reply P-6309, Engineering News-Record.

Sales Engineer: Young; Civil; with two or three years of engineering or construction experience for sales and promotional work on drainage and allied construction products and steel buildings. Salary, car and expenses furnished. Positions open in Texas, Mississippi and Oklahoma. P-6361, Engineering News-Record.

Wanted, young field engineer for large cement company, St. Louis area. Half-time traveling to near states. C. E. Degree, ability to meet people required. No selling. Submit snapshot with qualifications. Expenses, car and salary. P-6349, Engineering News-Record.

Young rapidly expanding well equipped construction corp. in Connecticut has opening for sewer line or paving superintendent wishing to invest from 5,000 to $10,000. Excellent opportunity for right man. Write: Stevison Const. Co. Inc., 150 Pomeroy Ave., Meriden, Conn.

ENGINEERS

Foreign Service

Graduate Chemical, Mechanical, and Electrical Engineers with minimum of 5 years' experience. For specialized assignments commensurate with qualifications in various phases of project and process engineering. Write giving full particulars regarding personal history and work experience. Please include telephone number.

Recruiting Supervisor, Box 30

ARABIAN AMERICAN OIL COMPANY

505 PARK AVENUE, NEW YORK 22, N. Y.

WANTED

STEEL ERECTION SUPERINTENDENT

With previous record in the erection of double leaf bascule bridges. Four months work in Wilmington, Del. starting October 1. Compensation unusually attractive.

Reply:

A. S. WIKSTROM INC.

Skaneateles, N. Y.

SANITARY ENGINEER

Opportunity available for Sanitary Engineer in an expanding pulp and paper mill located in the Middle Atlantic States. Age 25-35 years. Require man experienced in paper mill wastes, paper mill stream pollution and paper mill water purification. No other experience will be given consideration. Good salary and advancement. All replies confidential. Send resume of educational background and industrial experience to Director of Personnel
West Virginia Pulp & Paper Company
Luke, Maryland

POSITIONS VACANT

Wanted. Sanitary or Civil Engineers as resident engineers on large sewage project involving sewage treatment plant, pumping stations, and 63-½ miles of intercepting sewers including 30 miles in tunnel. Program calls for 3-year construction period. Must be experienced. Give full particulars and salary first letter. Allegheny County Sanitary Authority, 701 Civic Building, Pittsburgh 19, Pennsylvania.

Civil Engineers—Degree. Recent graduates or returning veterans preferred. Interested in design and development of steel products. Permanent positions. Submit qualifications and salary requirements. Granco Steel Products Company, 6506 N. Broadway, St. Louis, Missouri.

University Teaching position open to teach engineering drawing and mechanics, Dept. of Engineering Mechanics, University of Nebraska. Rank and salary based on applicant's qualifications. Write inquiries to E. J. Marmo, Chairman of Dept., Lincoln, Nebraska.

Wanted: Sewage Treatment Plant Operator to operate new trickling filter plant in City of 100,000. Send resume of experience and salary requirements to City Engineer, City Hall, Waco, Texas.

Asphalt Road Superintendent permanent position, write stating qualifications to: Box 142, Greenwich, Connecticut.

Supervisor wanted for plant mix and surface treatment. South central Ohio. Reputable firm. References required. P-6348, Engineering News-Record.

Civil or sanitary engineer with good background and at least 5 years experience in design of water supply and waste disposal facilities. Young and growing consulting office in Metropolitan New York. Permanent position with excellent opportunity. Salary open. P-6358, Engineering News-Record.

(Continued on the following page)

Additional Position Vacant Advertising on pages 92 & 93.

CLASSIFIED SEARCHLIGHT SECTION ADVERTISING

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)

$1.80 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

POSITION WANTED undisplayed advertising rate is one-half of above rate, payable in advance.

PROPOSALS, $1.80 a line an insertion.

INFORMATION:

BOX NUMBERS count as 1 line additional in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED—RATE PER INCH:
The advertising rate is $20.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

EMPLOYMENT ADVERTISING:
New Employment Opportunities Section for Displayed ads starting July issue. For details see announcement ad in this section.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page. E.N.R.

Send NEW ADVERTISEMENTS: To New York Office, 330 W. 42nd St., N. Y., for May 19th issue closing May 9th

SALARIED POSITIONS $5,000 — $35,000

We offer the original personal employment service (established 45 years). Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars.

R. W. BIXBY, Inc.
659 Brisbane Bldg. Buffalo 3, N. Y.

POSITIONS VACANT
(Continued from preceding page)

Wanted hydraulic engineer with several years experience in flood control by technical and educational association located in the Middle West. Some travel required. Reply giving resume of experience, education, salary expected and references. P-6364, Engineering News-Record.

EMPLOYMENT SERVICE

Salaried personnel, $3,000-$25,000. This confidential service, established 1929, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

EMPLOYMENT AGENCIES

Wanted Engineers, Designers, Draftsmen-Structural, Architectural, M.E., C.E., E.E., and Ind., also Teachers and Chemists. Cleveland Engineering Agency, 2132 E. 9, Cleveland.

POSITIONS WANTED

Construction Accountant, office manager, both field and home, thoroughly experienced all phases, ten years experience, currently with large sand & rock & ready mix plant southwest. Prefer foreign assignment. PW-6219, Engineering News-Record.

Project Supervisor—Manager—general superintendent. Chemical process packaging plants, U. S. and foreign. Knowledge projects in toto flow sheets to production by progress through engineering and construction departments. Degree equivalent. 25 years experience. Residence N. Y. City. Will accept office, field, and foreign assignments. PW-6208, Engineering News-Record.

Top flight piping engineer, 20 years broad experience, all phases industrial piping, heavy machy, conveyors, water treatment, sewage plants, go anywhere. PW-6374, Engineering News-Record.

Civil Engineer, 31, 5 years field & office experience with contractor and engineer on large bridges, highways, hangars, steel erection. Can handle men, do estimating, expediting. Want responsible position with growing organization. PW-6372, Engineering News-Record.

Heavy construction superintendent wants job in the east part of United States can give good reference 46 years old have as much experience as any man in the east. PW-6373, Engineering News-Record.

Mechanical inspector thirty years installation and supervision in heating, plumbing, process piping and air conditioning. PW-6231, Engineering News-Record.

Chief Draftsman—for small Eastern fabricator of heavy plate and structural desires opportunity in Pacific Coast or Rocky Mountain region. Experienced estimator, checker and detailer. PW-6319, Engineering News-Record.

Canadian, 32, graduate appraiser, extensive managerial, appraisal, & analysis experience in projects, including planning and financing. Presently with U. S. Army Corps of Engineers, handling entire construction progress and payments system on multi-million dollar airbase. Seeks interesting work, home or abroad, July or later. PW-6337, Engineering News-Record.

Graduate C. E., age 24. Presently Marine Corps Officer. Desire sales. Available Sept. 55. PW-6334, Engineering News-Record.

Construction Superintendent and engineer desires work in New England. Experienced industrial plants, housing, heavy construction, bridge and marine work, skilled estimator. PW-6168, Engineering News-Record.

Construction Engineer—Superintendent. Extensive experience water supply, sewage, bridge, railroad, industrial and heavy construction. Organize and direct construction projects. Registered. Age 55. Available soon. PW-6265, Engineering News-Record.

Civil Engineer—32, B.C.E. 6 years experience in steel erection and design. Have had responsible assignments in structural, plate, and pipe work, heavy machine installation and steel plant construction. PW-6304, Engineering News-Record.

Purchasing Agent, traffic, expediting, field office mgr., costs, liaison nations top gen. contrs. 20 yrs. private competitive & 10 yrs. gov't FF work. AEC Oak Ridge, Paducah, Portsmouth Q clearance. Prefer northeast. Available May. PW-6302, Engineering News-Record.

Land Surveyor—20 years experience highways—railroads—earth moving—pile driving—steel erection. PW-6307, Engineering News-Record.

Electrical & Mechanical Engineer (PE) completing foreign contract available May 15. Broad experience as project engineer on airfields, hydro & thermal plants, transmission, communications, POL, industrials, & AE. Foreign only. PW-6255, Engineering News-Record.

Professional Engineer and surveyor, age 43 wishes to associate with established consulting engineer on possible partnership basis; financially responsible experienced in methods of many leading AE firms, waterworks, sewage disposal, subdivisions, and atomic energy facilities. Phone O. R. 2-8517 Apt. #3 5410 W. Greenfield Ave., Milwaukee 14, Wisconsin.

Municipal Draftsman, 64, desires position in South or Southwest. 18 years with one city. PW-6273, Engineering News-Record.

Equipment Super—with experience and know how to satisfy the toughest operating conditions. Able to get the largest productive life from your equipment. Willing to travel, available for interview. Answer PW-6333, Engineering News-Record.

Construction Executive, available as project manager, on large operation, chief estimator for large organization or in other executive position where scope warrants employment of top man, thoroughly experienced on all types of construction and in every phase of general contracting. PW-5956, Engineering News-Record.

Civil Engineer 53, P.E. reinf. concrete heavy foundations, hydraulic and waterfront structures seeks employment as design or project engineer. International experience, speaks German and French. PW-6339, Engineering News-Record.

Architects' Superintendent—Available early May, wide experience—9 yrs. this position—16 yrs. field engr. and construction supt. PW-6359, Engineering News-Record.

Construction Supervisor desires responsible position with Architect, Consulting Engineer or Contractor. Experienced industrial—public buildings—utilities—mechanical trades—handle complete supervision. Now temporarily employed. Prefer eastern states. Reply details confidentially. PW-6360, Engineering News-Record.

SELLING OPPORTUNITY WANTED

Architect, Registered. Broad executive, contract, technical experience (foreign and domestic) interested in representing architectural or engineering firms located in the south, mid-west, west-coast, or foreign, as their New York area client or consultant contact for coordination expediting, new business. RA-6290, Engineering News-Record.

BUSINESS OPPORTUNITY

Partnership available — highway contractor wants full time working partner to invest minimum of $35,000 to expand equipment fleet. Mid-Southern location. Prefer man with C. E. Degree. BO-6303, Engineering News-Record.

CONSTRUCTION BOOKLET

For planning and construction estimates by engineers and contractors. Copyrighted booklet of basic formula and sample charts for rapid and accurate estimating of grading quantities for highways, railroads, canals, dams, etc. Based on many years of actual experience. $3.00 per copy, postpaid. Send orders to D. Misz, 140 E. 63rd St., N.Y.C. 21.

LEARN ESTIMATING

Complete Building Estimators Course, also Building Labor Calculator for practicing estimators. Thirty-fourth year serving the building industry. For free trial and all particulars write:

TAMBLYN SYSTEM
1420 Gilpin St. Denver 6, Colorado

Engineers—Foremen—Office Men

Learn latest methods to organize and run work. Prepare for the top jobs.
Send post card for details.

GEO. E. DEATHERAGE & SON
CONSTRUCTION CONSULTANTS
411 So. 5th Ave. Lake Worth, Florida

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-third year. Write today without obligation.
WILSON *Engineering Corp*
College House Offices HARVARD SQ. CAMBRIDGE, MASS.

Service to the Marine Industry on The Great Lakes

B & V EQUIPMENT COMPANY, Inc.
Rentals on Barges, Tugs & Scows
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Phone 7131

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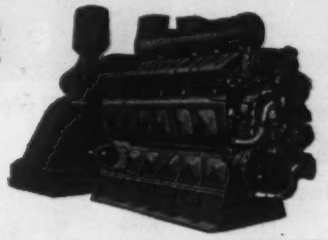

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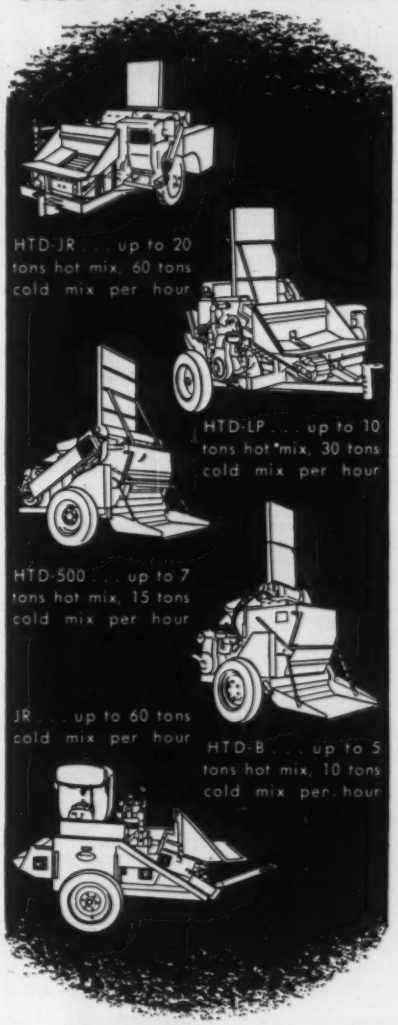
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EDITORIALS

Ton-mile Highway Taxes

REPORTS of legislative activities in the state capitals indicate continuing efforts to repeal existing ton-mile taxes on trucks or to prevent the passage of new legislation designed to relate the taxation of trucks to their weight and the distance they travel over the highways of a particular state.

These efforts of the trucking organizations should not be taken as evidence that a weight-distance tax is not sound in principle. Some individual laws may have undesirable aspects or may not be equitable in their treatment of some classes of users, and so may need revision, but the basic principle of relating participation in the cost of building and maintaining highways to weight of truck and distance traveled still is sound.

If more money must be taken from highway users to meet growing highway needs, as appears probable, the take should be determined by the most equitable method.

Waste Containment—A New Concept

AN ENTIRELY NEW CONCEPT of waste handling has been introduced by the radioactive wastes produced by our new nuclear industry. There is no such thing as disposal, as that term is generally understood in the field of sanitary engineering, for a large part of the wastes of this industry. In the handling of all wastes of higher than harmless radioactivity, the familiar concept of disposal must be supplanted by what might be called waste containment.

The few sanitary engineers who have been close to atomic energy developments long have admonished—not gloomily, but as a practical matter—that the greatest single limiting factor in the development and growth of nucleonics from a science into an industry will be our ability to handle radioactive wastes. Their warning was sounded anew and given new dimensions in a talk April 20 before the Metropolitan Section of the American Society of Civil Engineers.

At that meeting Joseph A. Lieberman, sanitary engineer in the Atomic Energy Commission's reactor development division, related recent estimates of how much atomic power might be developed in the years immediately ahead to the amount of high-level fission wastes this industry would produce. By 1980, only 25 years hence, it has been estimated that in the United States 175,000,000 kw might be installed in plants with atomic reactors as their fuel elements (ENR April 21, p. 21). Such plants would produce, according to Mr. Lieberman, mixed fission products as wastes equalling in radioactivity the radiation of 105,000 tons of radium, or twice all the radioactivity in all the oceans of the earth.

Certain low-level wastes from scientific work now done with radioisotopes can be diluted and dispersed. But for higher level wastes, the only present solution is to concentrate and store them in a safe place. There just is not enough water in which to dilute to safe concentrations the amount of radioactive wastes possibly produced by the nuclear power industry that is envisaged. Even now there is an increasing number of acres of buried atomic "ashes" in areas such as around Hanford, Wash.

This is truly an entirely new engineering problem of somewhat appalling dimensions for those who must find a solution. Ultimately, it is not inconceivable that some scientist may discover a way to dissipate the radioactivity of this waste, just as atomic fission was discovered. Or someone may develop a productive use. For now, however, public health and safety will depend on the ability of engineers to concentrate the waste products of atomic power development and provide safe places for their containment.

Rainmaking Powers Limited

AN EXTENSIVE CLOUD-SEEDING EXPERIMENT completed by New York University meteorologists over the last two years is of importance in that it should settle the question of whether large-scale effect on weather by cloud seeding is possible. It is not. Researchers working on developing storms all along the East Coast found they could not increase or decrease intensity of those storms nor change their direction.

It is pointed out, however, in NYU's report that the negative finding concerning large-scale effects does not discount local effects of cloud seeding, which is the type of seeding that is of chief interest to engineers in the fields of irrigation, power, and water supply.

In those fields, a three-year study of cloud seeding in California by engineers of the state's Division of Water Resources, completed last fall, produced paradoxical results. The precipitation from some storms was increased, as the operators had expected; but the seeding had no effect on other storms, and it actually reduced the precipitation from still other storms. As a result, the research group concluded that while there is fairly conclusive evidence that the physical mechanism exists whereby it is possible to modify the amount and pattern of precipitation from a given storm, the conditions under which that mechanism operates are so complex as to make it an open question whether anyone has developed the ability to exercise effective control of rainfall amounts over a specified area.

Taken together, the NYU and California reports serve to point to the desirability of concentrating further studies of rainmaking on learning whether the storm in which seeding increases precipitation has characteristics that make it distinct from a storm on which seeding has no effect or even reduces precipitation.

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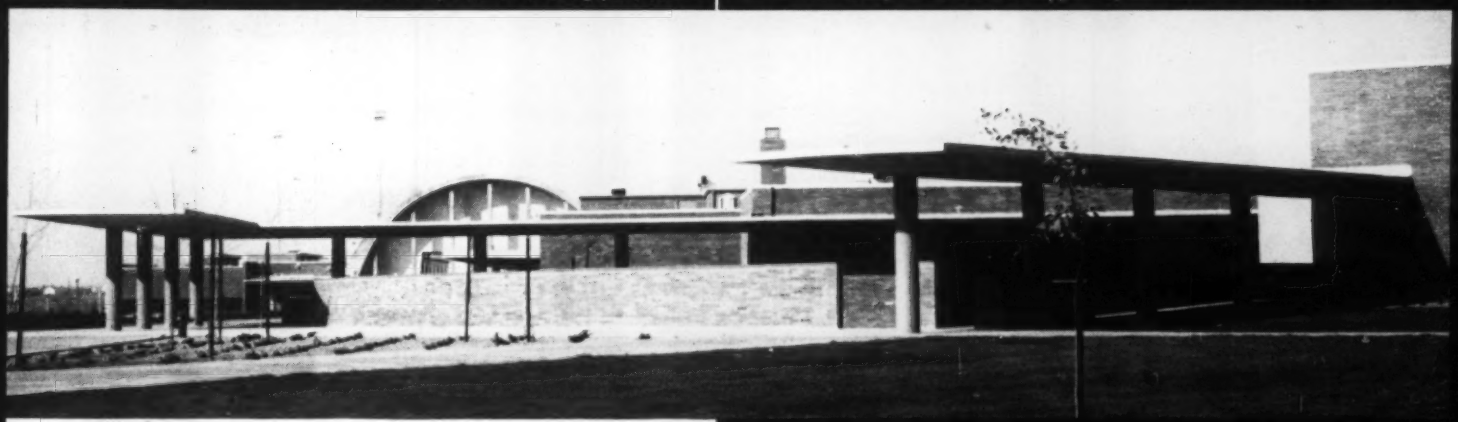

St. Joseph's School, Rockdale, Illinois. Archt.—Edo J. Belli, Chicago; Contr.—A. A. Rose Construction Co., Inc., Chicago. Pozzolith used in all concrete.

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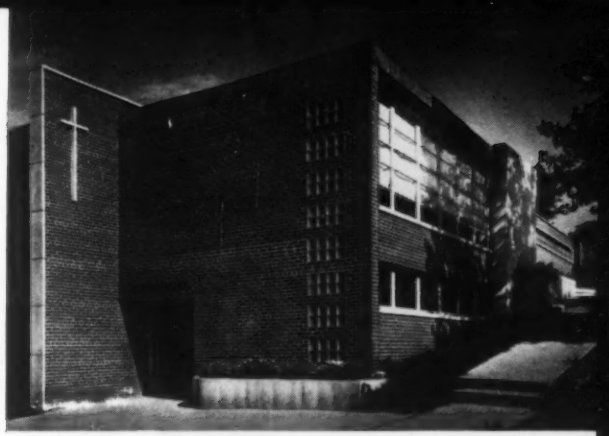

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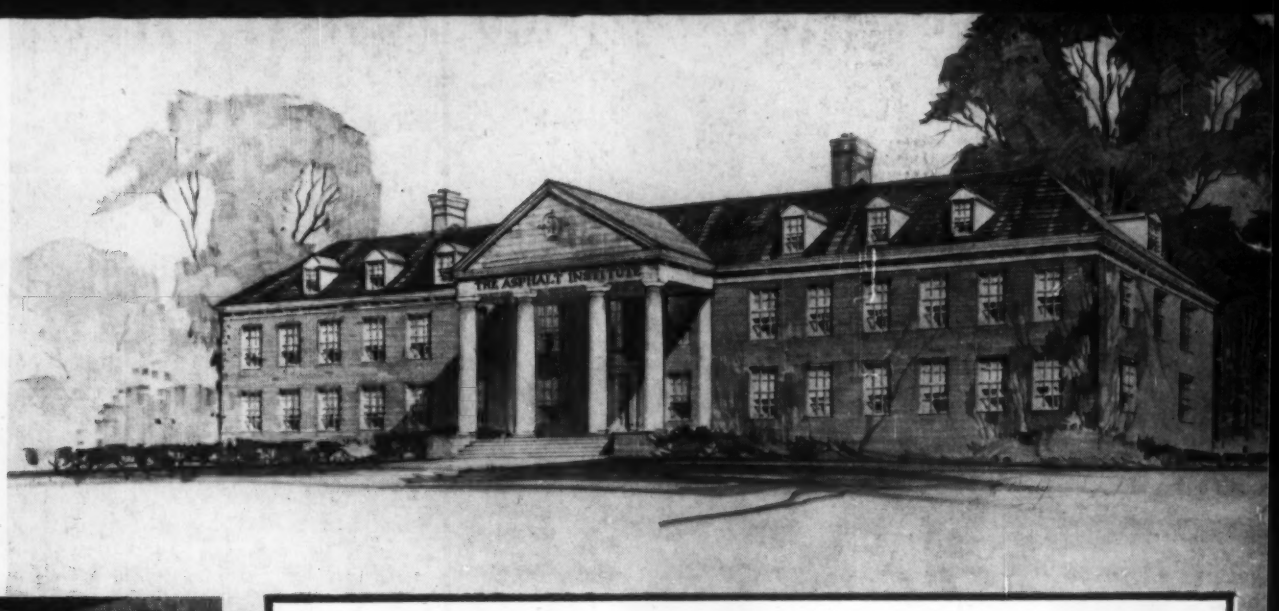

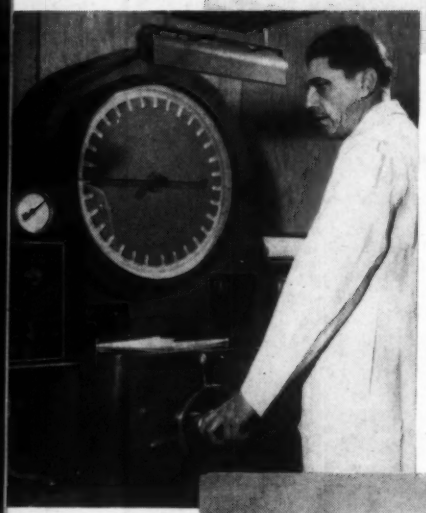

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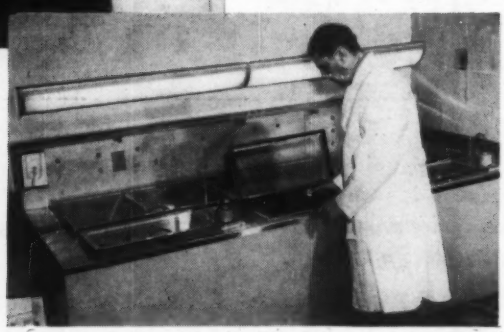

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The new laboratory, which occupies the entire first floor of the Asphalt Institute Building, is several times as large as the former "lab" and it is equipped with a number of new pieces of testing equipment.

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